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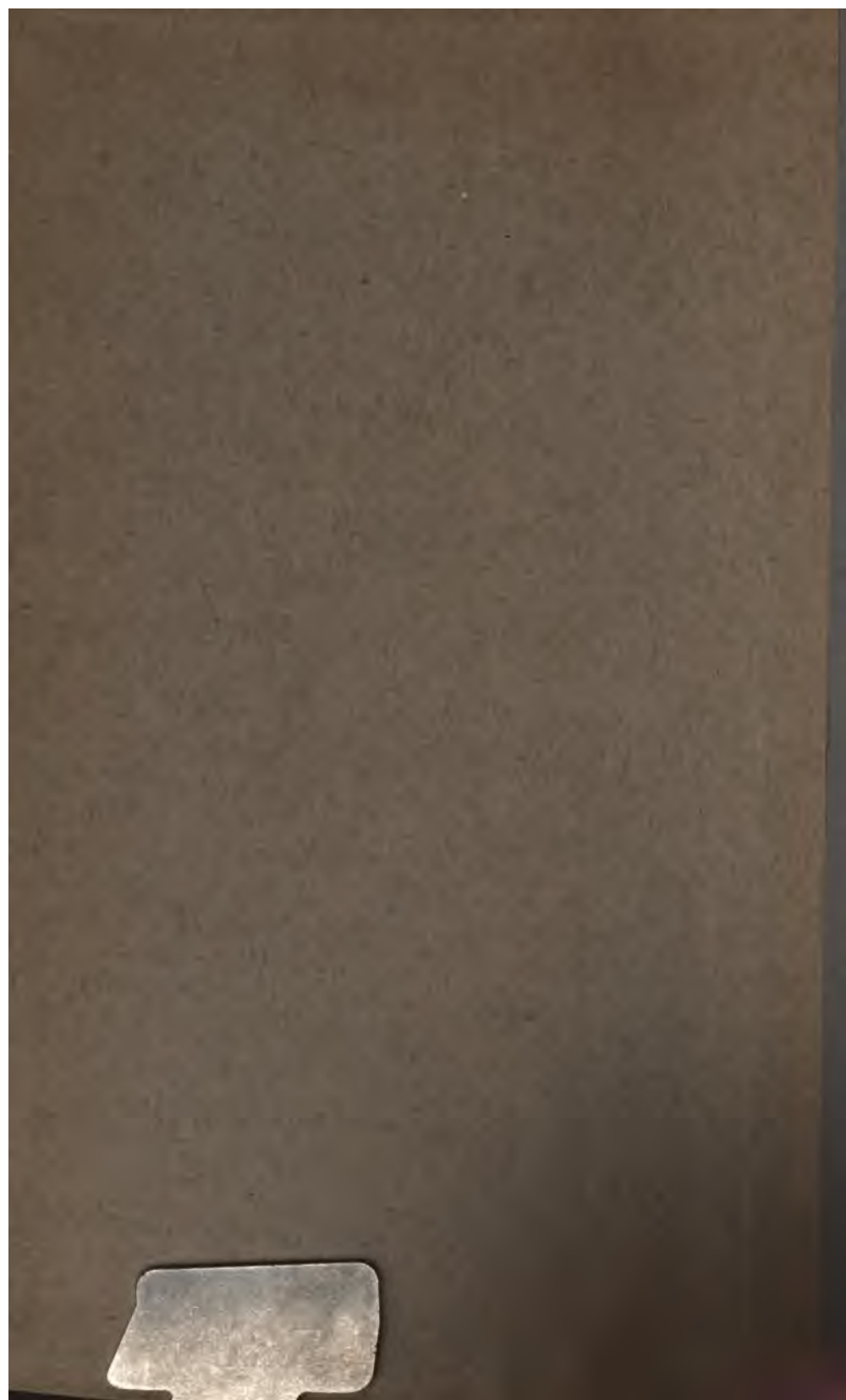
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St. Paul  
Water Court









U.S. N. BAKER 1897  
K  
Fourteenth Annual Report

OF THE

BOARD

OF

759902

WATER COMMISSIONERS

OF THE

CITY OF ST. PAUL.

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DECEMBER 1, 1895.

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ST. PAUL:  
J. W. CUNNINGHAM & CO., PRINTERS.  
1895



FOURTEENTH ANNUAL REPORT

OF THE

BOARD

OF

WATER COMMISSIONERS

OF THE

CITY OF SAINT PAUL.

DECEMBER 1, 1895.

ST. PAUL:  
J. W. CUNNINGHAM & CO.  
1895.





FOURTEENTH ANNUAL REPORT

OF THE

BOARD

OF

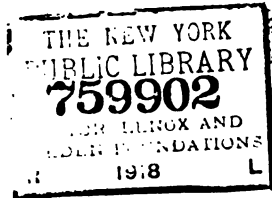
WATER COMMISSIONERS

OF THE

CITY OF SAINT PAUL,

DECEMBER 1, 1895.

ST. PAUL:  
J. W. CUNNINGHAM & Co.  
1895.



OFFICERS  
OF THE  
CITY WATER WORKS,  
DECEMBER 1, 1895.

BOARD OF WATER COMMISSIONERS.

R. B. C. BEMENT, President. Term expires Jan. 1, 1897.  
A. H. LINDEKE. Term expires Jan. 1, 1897.  
J. F. HOYT. Term expires Jan. 1, 1900.  
H. E. STEVENS. Term expires Jan. 1, 1898.  
THOS. GRACE. Term expires Jan. 1, 1899.

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JOHN CAULFIELD, Secretary.  
JOHN B. OVERTON, Superintendent.  
L. W. RUNDLETT, City Engineer and Engineer of the Board.  
MARTIN FEIST, Chief Engineer and Engineer of McCarron Lake Station.  
JOHN SILVIS, Assistant Engineer of McCarron Lake Station.  
H. GEISLER, Gate Keeper and Engineer of Vadnais Lake Station.  
A. A. THOMPSON, Assistant Engineer of Vadnais Lake Station.  
JACOB ABRESCH, Engineer of Baldwin Lake Station.  
OS. DO ERR, Engineer of West St. Paul Station.  
FRANK GALLOWAY, Assistant Engineer of West St. Paul Station.  
GEO. DOORLEY, Meter Inspector.

NEW YORK  
JUN 1  
1896

FOURTEENTH ANNUAL REPORT

— OF THE —

BOARD OF WATER COMMISSIONERS

— OF THE —

CITY OF ST. PAUL.

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OFFICE OF THE BOARD OF WATER COMMISSIONERS.

ST. PAUL, MINN., December 1, 1895.

*To the Honorable the Mayor, and Common Council of the City of St. Paul:*

GENTLEMEN:—Herewith we beg to submit for your consideration the fourteenth annual report of your Board of Water Commissioners.

The annual precipitation for the year just passed was very nearly the same as the year previous, viz.: 25.40 inches or four-tenths of one inch less than last year, or about seven percent less than the average rain-fall of this locality, and the rain-fall occurred during the months when least available. There was absolutely no surplus of water this year beyond our impounding capacity, as the level of the water in Baldwin Lake and in Vadnais Lake did not once during the year reach the height where it would waste over, a result which shows conclusively that we have very nearly if not quite reached the capacity in million gallons of daily water supply from our present available water shed.

Early in the season the contract for the completion of the conduit from Otter Lake was let and the work completed, and an additional supply of water amounting to five hundred and fifty million gallons made immediately available by gravity. It has been decided not to call on this supply until absolutely necessary, but to keep it as a reserve.

At our Vadnais Lake station new pumping machinery of increased capacity and economy has been purchased and put into operation. This machinery

was designed and located especially for the purpose of increasing the supply from the artesian wells, the wells were all cut off at a greater depth and connected together and to the suction of the new pumping engine, and the result shows an increase from this well system alone of three million gallons daily of clear, cold and wholesome water, and one ton of coal now pumps over four times as many gallons of water as did the old crude pumping machinery which has been removed.

A vegetable taste and odor in the water for a short term during the extreme hot weather gave us considerable trouble and annoyance, and while from analyses made frequently we found that it contained nothing that was unhealthful, yet it was very annoying to the consumers, and forced us to flush our mains more frequently than ever before. We attribute this unusual and extraordinary condition of the water to the fact that owing to the construction of the abutments for the new bridge over the Great Northern Railway at Como Avenue, our large twenty inch supply main on that avenue had to be cut and plugged on either side of the crossing, leaving long dead ends filled with water with no circulation, to stagnate and decompose, a condition most favorable for the mossy vegetable growth in the pipe, which has always given us more or less trouble in dead ends, and which in this particular case we believe accounted for the annoying condition of the water supplied in July and August. When the new pipe was laid under the bridge and connected with the old main on either side, and the main again put into use, owing to its large size it was very difficult to get sufficient velocity in the pipe by flushing to thoroughly scour the growth off the inside of the pipe. The trouble is now removed and we have no idea such a condition will again arise.

The small mains on Fifth and Sixth streets, at the request of the Fire Department for additional fire hydrants, have been removed and relaid with pipes of larger sizes, also the cement lined sheet iron pipes on West Third, Wabasha and St. Peter streets were removed and replaced by cast iron before the streets were repaved.

Our high service reservoir was given its annual cleansing and found to be in good condition, and rather less sediment than usual found therein.

During the last three months of our year we have been kept on the anxious seat in regard to the large force main supplying the High Service reservoir from the McCarron Lake pumping plant. The County Commissioners let a contract for the grading of Rice street over the swampy sink hole between our pumping station and McCarron Lake, over which our force main is carried on a trestle of piling driven from 20 to 48 feet before reaching hard ground. This line had stood without any settlement ever since it was laid, but through the bad judgment and false economy on the part of the contractor who had the grading, our piling was loaded on one side, instead of equally from both sides, and the whole structure pushed to the North, carrying with it the cast iron water main over two feet, and we were put to a great expense to maintain the same. Work has been stopped for the winter, but we look for more trouble in the spring when work is resumed. A break in this main would not only involve great loss from the emptying of the reservoir, and the flooding and washing out in the vicinity of the break, but would leave the entire high

service districts without water for fire protection or private consumption for a period of time until the same could be repaired.

Your attention is called to the sinking fund of this department. This fund was created by the law for the purpose of paying off the bonds issued for the water works when they mature. The Corporation Counsel at the request of the Board rendered his opinion that the City Treasurer was the only legal custodian of the fund, and the proper investment of this fund was not in the hands of this Board. A few facts as developed this last year may be interesting.

July 1, 1895, there was to the credit of this sinking fund, in the hands of the City Treasurer but uninvested.....	\$ 431.14
From July 15 to August 9 in same hands, lying uninvested .....	62,521.49
From Aug. 9 until Sept. 15 in the same hands, lying uninvested...	111,981.49
From Sept. 15 to Oct. 16 in the same hands, lying uninvested.....	142,943.99
From Oct. 16 until Dec. 1 in the same hands, lying uninvested.....	140,910.67

The last amount, viz., \$140,910.67, will probably remain uninvested until the middle of January, 1896. The banks allow the city two per cent per annum interest on daily balances. Our sinking fund while uninvested earned therefore upwards of one thousand dollars, over and above the earnings of the invested balance, which amount has not been credited to our sinking fund, where it belongs, but has been credited to some other fund, at the cost of this department. This is wrong, and proper legal steps should be taken to correct this direct violation of the city charter, as there is no reasoning that will justify the earnings of a sinking fund being applied to any other purpose than the increase of that fund. It is against equity, and the rights of the investors in these bonds for the protection of which the sinking fund was created and the earnings of which have been diverted. To instance the peculiar workings of the custodian of our sinking fund in relation to investments, we mention the following. Generally our sinking fund is invested in the city tax certificates, which usually mature in a comparatively short time, say an average of 18 months. July 15, 1895, this fund had, with maturing investments and balance on hand, an amount equal to \$166,551.49, and on that date bids were received by the City Comptroller for upwards of \$300,000.00 certificates. Instead of immediately reinvesting this entire balance in these certificates, only \$103,000.00 was invested, upon which our fund was charged with \$1030.00 premium, and the balance or over \$200,000.00 were sold to banks and other investors, and upwards of \$62,000.00 of our fund left uninvested. Our fund was charged with and paid the same premium on these certificates that the other purchasers did. Why was this large balance left uninvested? Was it through negligence or for the purpose of keeping a large balance in the banks, that the two per cent interest which it earned might be used for increasing some other fund of the city at the expense of the sinking fund of the Water Department?

This fund has also been charged with several days interest accrued on certificates when the funds were on hand with the City Treasurer actually for the days the interest was charged. It is suggested that the proper legal measure be taken to remedy this condition.

From the annual report dated December 31, 1892, of the City Comptroller

and the reports of the two succeeding years it is stated that the cost of the "Water Works System" is \$4,123,945.00, which is not correct.

The following table will show the original purchase price paid by the city for the works, and the increase on account of extensions, in distributing mains, new reservoir, conduits, and new water supply at the end of each year ever since.

August 10, 1882, Original purchase.....	\$ 510,000.00
Dec. 1, 1882, Total cost.....	523,860.99
Dec. 1, 1883, " " .....	679,575.40
Dec. 1, 1884, " " .....	1,447,494.86
Dec. 1, 1885, " " .....	1,697,903.71
Dec. 1, 1886, " " .....	1,859,319.57
Dec. 1, 1887, " " .....	2,119,027.68
Dec. 1, 1888, " " .....	2,507,660.71
Dec. 1, 1889, " " .....	2,864,097.65
Dec. 1, 1890, " " .....	3,102,203.42
Dec. 1, 1891, " " .....	3,187,774.00
Dec. 1, 1892, " " .....	3,348,555.99
Dec. 1, 1893, " " .....	3,419,059.46
Dec. 1, 1894, " " .....	3,471,410.12
Dec. 1, 1895, " " .....	3,579,975.55

From the figures given in the City Comptroller's Reports you will see that for the years 1892, 1893 and 1894 the amount given as the cost of the "Water Works System" was unchanged, though many miles of extensions were laid those years, and the total cost of the works has never reached \$4,123,945, but at the end of this our fiscal year the total cost was some \$543,969.45 less than the amount given in the Comptroller's Report, dated December 31, 1894. This is misleading and incorrect and should be corrected.

R. B. C. BEMENT.

A. H. LINDEKE.

J. F. HOYT.

H. E. STEVENS.

THOMAS GRACE.

Board of Water Commissioners.

# SECRETARY'S REPORT.

OFFICE OF THE BOARD OF WATER COMMISSIONERS.  
ST. PAUL, MINN., Dec. 1, 1895.

To the Board of Water Commissioners,

GENTLEMEN: I herewith submit my fourteenth (14th) annual report with accompanying statements and tables, showing in detail, and under appropriate heads, the financial operations of the Water Department for the year ending November 30th, 1895; also a comparative statement of the receipts and disbursements from August 10th, 1882 (the time of the purchase of the works by the city), to date.

## REVENUE—See Table No. 2.

Balance on hand last report, Dec. 1, 1894, in the hands of		
City treasurer.....		\$52,812.16
General water receipts.....	\$179,246.52	
Miscellaneous water receipts.....	15,717.97	
Connections (street services).....	14,349.87	
Extension.....	1,915.60	
Shutting off and turning on water (penalties).....	78.00	
Frontage tax.....	147,171.40	
Construction.....	44.70	
Sinking fund earnings.....	12,270.00	
Sinking fund.....	1,766.40	\$372,560.46
Total.....		\$425,372.62

## DISBURSEMENTS—See Table No. 2.

General maintenance.....	\$39,006.14	
Connections (street service).....	16,674.95	
Repairs.....	4,540.50	
Meters.....	7,022.17	
Extensions.....	81,360.58	
Construction.....	24,624.65	
Interest.....	114,200.60	
Refunded frontage tax.....	237.12	
Sinking fund.....	87,270.00	
Sinking fund earnings.....	1,766.40	
Total.....		\$376,702.51
Balance in hands of City Treasurer.....		\$48,670.11

The general water receipts, including high and low service and meters, were one hundred and seventy-nine thousand two hundred and forty-six dollars and forty-two cents (\$179,246.52), an increase of two hundred and seventy-nine dollars and twenty cents (\$279.20), of which fifteen hundred and eleven dollars and twenty-six cents (\$1,511.26) was from high service, and five hundred and seventy-seven dollars and seventy-four cents (\$577.74) was from meters, and a decrease of eighteen hundred and nine dollars and eighty cents (\$1,809.80) on low service. The decrease of the revenue from low service consumers is caused principally by the large number of meters that were placed



on services the past year. The small increase in the revenue from meter consumers is owing to the reduction of meter rents which went into effect over a year ago, and the reduction of meter rates, which went into effect July 1st, 1895.

The miscellaneous water receipts, from builders, hydrant streams, for flushing sewers, skating rinks, etc., filling cisterns and sprinkling streets, were fifteen thousand seven hundred and seventeen dollars and ninety-seven cents (\$15,717.97), a decrease of twenty-five hundred and sixty-six dollars and forty-six cents (\$2,566.46) over the year 1894. There was an increase of six hundred and forty-six dollars and fifteen cents (\$646.15) from builders, and a decrease of four hundred and eight dollars and fifteen cents (\$408.15) from water from miscellaneous use of hydrant streams, two hundred and forty-eight dollars and eighteen cents (\$248.18) for filling cisterns, and twenty-five hundred and fifty-six dollars and thirty-three cents (\$2,556.33) for sprinkling streets.

Extension Account is credited with nineteen hundred and fifteen dollars and sixty cents (\$1,915.60), of which one hundred and sixty-two dollars and ninety cents (\$162.90) was for scrap iron sold to the St. Paul Plow Co. under contract, three hundred and seventy-five dollars and seventy-two cents (\$375.72) was for condemned water pipe sold (authorized by the Board), seven hundred and forty-six dollars and nine cents (\$746.09) for putting in large cast iron services for automatic fire extinguishers and large consumers, five hundred and seventy-four dollars and thirty-four cents (\$574.34) for laying water pipe for the Northern Pacific Railway Co. and the Warren Scharf Asphalt Paving Co., and fifty-six dollars and fifty-five cents (\$56.55) for labor furnished and oil barrels sold.

Construction account is credited with forty-four dollars and seventy cents (\$44.70) of which forty-three dollars and eighty cents (\$43.80) was from the "Soo" Railway Co. for the expense of lowering the creek at the outlet of McCarron Lake near the pumping station, and ninety cents (90-100) for sale of scrap iron.

#### INTEREST, REPAIRS, EXTENSION, GENERAL MAINTENANCE AND OTHER ACCOUNTS.

One hundred and fourteen thousand and two hundred dollars (\$114,200.00) being the annual interest on the bonded debt (\$2,460,000.00) has been paid from the earnings of the works.

#### REPAIR ACCOUNT.

Forty-five hundred and forty dollars and fifty cents (\$4,540.50) was paid on this account, a decrease of three hundred and thirty-four dollars and thirty-seven cents (\$334.37); of which thirty-two hundred and ninety-two dollars and sixty cents (\$3,292.60) was on account of hydrants, eight hundred and one dollars and ninety cents (\$801.90), on account of valves and four hundred and forty-six dollars (\$446.00) on account of water mains.

#### GENERAL MAINTENANCE.

Thirty-nine thousand and six dollars and fourteen cents (\$39,006.14) was paid on this account, a decrease of one hundred and thirty-three dollars and fifty-eight cents (\$133.58). (See table No. 15). The expense of maintaining the four pumping stations and Dale street reservoir was seventeen thousand

three hundred and eighty-four dollars and fifty-two cents (\$17,384.52), of which seventy-six hundred and seventy-five dollars and thirty-three cents (\$7,675.33) was for salaries, eighty-nine hundred and sixty-three dollars and seventy-five cents (\$8,963.75) was for fuel, three hundred and twenty dollars and eleven cents (\$320.11) was for waste and machine oil, three hundred and seventy-two dollars and thirty-three cents (\$372.33) was for repairs, and fifty-three dollars (\$53.00) for kerosene oil, leaving a balance of twenty one thousand six hundred and twenty-one dollars and sixty-two cents (\$21,621.62) for salaries and labor of all officers, employees, office expenses, fuel and all other expenses necessary for maintaining the works. See table No. 19 for comparative statement of the expenses of maintaining the pumping stations and reservoir for the past five years.

## EXTENSION ACCOUNT.

Eighty-one thousand three hundred and sixty dollars and fifty-eight cents (\$81,360.58) was paid on account of city extensions. Included in this amount was the expense of an additional 30-inch supply main laid from the reservoir to Dale and Front streets, a distance of 9,234 feet at an expense of thirty-eight thousand three hundred and sixty-five dollars and seventy-eight cents (\$38,365.78), of which thirty thousand six hundred and six dollars and fifty-three cents (\$30,606.53) was for cast iron pipe and specials, forty-two hundred and fifty-eight dollars and twenty-five cents (\$4,258.25) for laying same under contract, and thirty-five hundred and one dollars (\$3,501.00) for drayage, pig lead, valves, etc. The balance of extensions, including relaying pipe, amounting to six miles and 1339 feet, varying in size from 6 inches to 12 inches, was laid at an expense of forty-two thousand nine hundred and ninety-four dollars and eighty cents (\$42,994.80), of which sixteen thousand two hundred and fifty dollars and forty-six cents (\$16,250.46) was for cast iron pipe and special castings, eighteen thousand three hundred and seventy dollars and thirty-one cents (\$18,370.31) was for laying same by day labor and under contract, twenty-two hundred and eight dollars and ninety-five cents (\$2,208.95) for fire hydrants, twenty-one hundred and thirty-four dollars and seventy-three cents (\$2,134.73) for valves and valve boxes, fourteen hundred and twenty-five dollars and eighty-eight cents (\$1,425.88) for pig lead, and hemp packing, and twenty-six hundred and four dollars and forty-seven cents (\$2,604.47) was for drayage, tools, blacksmithing, lumber, supplies, etc.

## CONSTRUCTION ACCOUNT.

Twenty-four thousand six hundred and twenty-four dollars and sixty-five cents (\$24,624.65) was paid on this account for work and material, namely; new canal and conduit, terminal chamber, junction chamber, and intake chamber, between Pleasant and Otter Lakes; pump well, pipe connections for the wells and new pump for the Vadnais Lake artesian well plant.

## PAY ROLL.—(See Table No. 13.)

Nearly all the work in laying the water mains the past season was done under contract, the putting in of service pipes, additional fire hydrants and

valves, street sprinkling hydrants was done by day labor, also work at the various pumping stations, lakes and canals. The pay roll of all officers and employes for the year amounted to fifty-one thousand four hundred and eighty-six dollars and three cents (\$51,486.03).

SINKING FUND.—(See Table No. 12.)

This fund now amounts to three hundred and thirty-six thousand nine hundred and ten dollars and sixty-seven cents (\$336,910.67). Your attention is respectfully called to table No. 12 accompanying this report, showing the sinking fund investments, date of investments, date of certificates, when due, etc.

This account increased the past year eighty-five thousand five hundred and three dollars and sixty cents (\$85,503.60), of which seventy-five thousand dollars (\$75,000) was paid from the earnings of the works, and ten thousand five hundred and three dollars and sixty cents (\$10,503.60) being the interest earnings on the invested funds; the earnings have not been as large as the year previous, owing to the fact that the interest on the tax levy certificates (in which this fund is invested) has been reduced to 5 per cent, and in addition 1 per cent premium has been paid for said certificates.

CONTRACTS.—See Table No. 6.

Contracts have been let during the year amounting to one hundred and eight thousand and ninety-three dollars and thirty-six cents (\$108,093.36), on which eighty-nine thousand three hundred and seventy dollars and twenty-nine cents (\$89,370.29) has been paid, leaving a balance of eighteen thousand seven hundred and twenty-three dollars and seven cents (\$18,723.07) to be paid when contracts are completed. The large increase in this item is partially due to the change in policy on the part of the board in letting all pipe laying by contract instead of doing the same by day labor themselves. On December 1, 1894, there was due on contracts, not then completed, the sum of ten thousand one hundred and fifteen dollars and forty-seven cents (\$10,115.47), on which ten thousand and sixty-five dollars and forty-seven cents (\$10,065.47) has been paid, leaving a balance of fifty dollars (\$50.00) still due.

BONDED DEBT.—(See Table No. 7.)

No increase has been made in the bonded debt during the year. The present bonded debt is two million four hundred and sixty thousand dollars, (\$2,460,000), the annual interest on which is one hundred and fourteen thousand and two hundred dollars, (14,200), and which is paid from the revenue of the works.

FRONTAGE TAX.—(See Table No. 11.)

There has been collected during the year by the County Treasurer one hundred and forty-seven thousand one hundred and seventy-one dollars and forty cents (\$147,171.40), on account of frontage tax. Your attention is called to

Table No. 11 accompanying this report, showing in detail the collections, balances, etc. for the various years this assessment has been made.

Your attention is also called to Table No. 21, showing the number of miles of mains laid annually since August 10th, 1882, (when the city purchased the works), the cost of same, expenditure for construction outside of city limits, annual maintenance, number of taps, annual receipts from consumers and the annual increase, frontage tax receipts and assessments, and the number of miles of mains that will be dropped annually from the frontage tax assessments under the law passed by the Legislature last year, exempting property in front of which water mains are laid from further assessments after having paid ten (10) years. From this table it appears that property in front of forty-four miles of mains are already exempt, and twenty-three and a half miles will be exempt next year.

#### METERS.—(See Tables 16 and 18.)

There are now in service eleven hundred and nine meters (1,109) an increase of two hundred and ninety one (291) over last year, of which the water department owns one thousand and sixty-three (1063) and the consumers forty-six (46.) In addition to these the water department has seventy-four (74) meters in the work shop, all of which are in good order. The receipts from meter consumers was fifty-nine thousand seven hundred and fifty-four dollars and twenty-two cents (\$59,754.22.) Four hundred and fifty-three (453) meters were tested the past year. The item of labor is larger than last year on account of the large number of meters set and the policy of the Board to make no charge for setting, where there is a change from card to meter rates, so as to encourage their use.

#### SERVICES.—(See Table No. 14.)

During the year seven hundred and one (701) applications have been made for service connections, of which three hundred and ninety (390) were on high service and three hundred and eleven (311) on low service, an increase of one hundred and ninety-nine (199) over the year 1894. Total number of applications to date is 14 242, of which 8,113 are on high service and 6,129 on low service. There were 2,012 applications, and all on low service, when the city purchased the works in August, 1882. The expense of this account was large this year on account of the large number of streets repaved, which necessitated the repairing and lowering a large number of old services and the putting in of new ones.

#### PLUMBING AND INSPECTION.—(See Table No. 20.)

Forty-nine (49) plumbers were granted license during the year, and 1,170 permits were issued to them to do work in connection with the introduction and extension of water services, against 1,065 in 1894, 1,362 in 1893, 1,649 in 1892, 1,991 in 1891, 2,182 in 1890, 2,424 in 1889, 1,707, in 1888, 1,610 in 1887, 1,497 in 1886, 1,454 in 1885 and 718 in 1884. In addition to the inspection and examination of all the work done by licensed plumbers, there

were 1,077 special inspections, of which 606 were on high service and 471 on low service. Nearly all of these special inspections were made at the request of consumers for change of rate. We are now making a general inspection of all premises where water is used. This is done every two years. Table No. 20 shows the character and number of hose violations reported to this department the past season. There were only 276 violations reported as against 922 in 1894. This table also shows a comparison of the character and number of hose violations reported for years 1894 and 1895.

Respectfully submitted,

JOHN CAULFIELD,  
Secretary.

TABLE NO. 1.

TRIAL BALANCE, DECEMBER 1, 1895.

ACCOUNT.	DR.	CR.
St. Paul Water Works (original purchase).....	\$510,000.00	
Bond Account.....		\$2,460,000.00
General Water Receipts.....		1,859,976.89
Miscellaneous Water Receipts.....		233,484.88
Connection (Services).....		7,289.61
Extension Account.....	1,897,985.27	
General Maintenance.....	354,466.66	
Repairs.....	51,111.07	
Meter.....	41,284.92	
Construction.....	1,120,879.21	
Interest.....	1,167,915.11	
General Water Receipts (Hydrant Account).....		121,663.19
Sinking Fund.....	336,910.67	
Sinking fund earnings.....		33,247.48
Shutting off and turning on water.....		2,176.00
Frontage tax.....		811,384.97
Jno. Wagner, City Treasurer.....	48,670.11	
	\$5,529,223.02	\$5,529,223.02



TABLE NO. 2.

RECEIPTS AND DISBURSEMENTS FROM DEC. 1, 1894, TO DEC. 1, 1895.

RECEIPTS.		
Balance, Dec. 1, 1894.....		\$52,812.16
General water receipts, high service.....	\$70,704.14	
"    "    "    low service .....	48,788.22	
"    "    "    meters.....	59,754.18	
		\$179,246.52
Miscellaneous receipts, builders.....	\$1,521.03	
"    "    "    flushing sewers and		
hydrant streams.....	403.43	
Miscellaneous receipts, filling cisterns.....	317.01	
"    "    "    sprinkling streets...	13,476.50	
		\$13,717.97
Connections—services.....		14,349.87
Extension.....		1,915.60
Frontage tax.....		147,171.40
Shutting off and turning on water.....		78.00
Construction.....		44.70
Sinking fund.....		1,766.40
Sinking fund earnings.....		12,270.00
		372,560.46
Total receipts.....		\$425,372.62
DISBURSEMENTS.		
General Maintenance—		
Salaries.....	\$19,991.36	
Stationery and printing.....	1,550.43	
Miscellaneous.....	961.18	
Labor.....	5,450.68	
Material.....	10,380.37	
Stable {Feed.....	436.47	
{Repairs.....	235.65	
		\$39,006.14
Connections—		
Labor.....	\$11,456.69	
Pipe.....	3,483.72	
Brass goods and stop boxes.....	1,296.07	
Tools and miscellaneous.....	438.47	
		16,674.95
Repairs—		
Hydrants. {Labor.....	\$3,172.34	
{Material.....	120.26	
Valves..... {Labor.....	549.82	
{Material.....	252.08	
Mains—Labor.....	446.00	
		4,540.50
Meters—		
Labor.....	\$2,439.05	
Freight and meters.....	4,583.12	
		7,022.17
Extensions—		
Pipe and special castings.....	\$46,856.99	
Labor and contracts.....	23,628.56	
Tools and repairs of same.....	874.49	
Advertising.....	24.99	
Fire hydrants.....	2,208.95	
Valves.....	3,410.73	
Lead and hemp packing.....	2,625.88	
Lumber and material.....	1,411.87	
Miscellaneous and building account.....	318.12	
		81,360.58
Construction (new supply)—		
Pipe and special castings.....	\$899.70	
Labor and contracts.....	20,324.17	
Tools and repairs of same.....	32.54	
Lumber and material.....	1,245.97	
Freight.....	8.35	
Engineering and right of way.....	2,066.61	
Miscellaneous and building account.....	47.31	
		24,624.65
Interest.....		114,200.00
Refunded frontage tax.....		237.12
Sinking fund.....		87,270.00
Sinking fund earnings.....		1,766.40
Total disbursements.....		376,702.51
Balance.....		\$48,670.11



TABLE NO. 3.

RECEIPTS AND DISBURSEMENTS FROM AUG. 10, 1882, TO DEC. 1, 1895.

General water receipts, high service.....	\$480,867.43	
"    "    "    low service.....	825,939.45	
"    "    "    meters.....	553,170.01	
		\$1,859,976.89
Miscellaneous receipts, builders.....	\$36,365.68	
"    "    "    water carts.....	3,796.13	
"    "    "    flushing sewers and		
hydrant streams.....	10,819.31	
Miscellaneous receipts, filling cisterns.....	19,848.77	
"    "    "    sprinkling streets.....	162,654.99	
Connection—Services.....		233,484.88
Extension.....		280,505.75
Interest.....		30,052.22
Frontage tax.....		67,944.84
Sinking fund.....		813,768.31
Shutting off and turning on water.....		3,888.82
Sinking fund earnings.....		2,176.00
Repairs.....		37,136.30
General water receipts, hydrant account.....		3,259.15
Construction.....		121,663.19
Bills payable.....		3,518.76
Bonds.....		653,000.00
Total receipts.....		2,110,000.00
		\$6,220,395.11
DISBURSEMENTS.		
General Maintenance.		
Salaries.....	\$195,592.39	
Stationery and printing.....	12,606.67	
Miscellaneous.....	6,983.58	
Labor.....	49,215.61	
Material.....	81,816.50	
Stable { Feed.....	5,095.75	
Repairs.....	3,129.91	
Connections—		\$354,440.41
Labor.....	\$153,684.53	
Pipe.....	73,823.40	
Brass goods and stop boxes.....	38,560.97	
Tools and Miscellaneous.....	7,146.49	
Repairs—		273,215.39
Hydrants { Labor.....	33,728.11	
Material.....	1,635.62	
Valves { Labor.....	1,104.71	
Material.....	544.42	
Mains { Labor.....	15,129.00	
Material.....	2,357.21	
Meters—		54,499.07
Labor.....	13,530.36	
Freight and meters.....	27,625.56	
Extensions—		41,155.92
Pipe and special castings.....	\$1,015,067.03	
Labor and contracts.....	608,659.64	
Tools and repairs of same.....	19,607.69	
Advertising.....	322.48	
Pipe hydrants.....	96,574.68	
Valves.....	75,726.99	
Lead and hemp packing.....	65,710.97	
Lumber and material.....	22,013.18	
Miscellaneous and building account.....	24,594.40	
Construction—new supply		1,928,277.06
Pipe and special castings.....	\$175,968.06	
Labor and contracts.....	559,802.13	
Tools and repairs of same.....	5,183.65	
Lumber and material.....	87,551.40	
Freight.....	9,479.22	
Engineering and right of way.....	119,967.20	
Miscellaneous and building account.....	18,749.12	
Reservoirs.....	147,484.77	
		1,124,185.55
Interest.....		1,235,879.95
Refunded frontage tax.....		2,383.34
Bills payable.....		653,000.00
Bond.....		160,000.00
Sinking fund.....		340,799.49
Sinking fund earnings.....		3,888.82
Total disbursements.....		6,171,725.00
Balance.....		\$48,670.11

TABLE NO. 4.

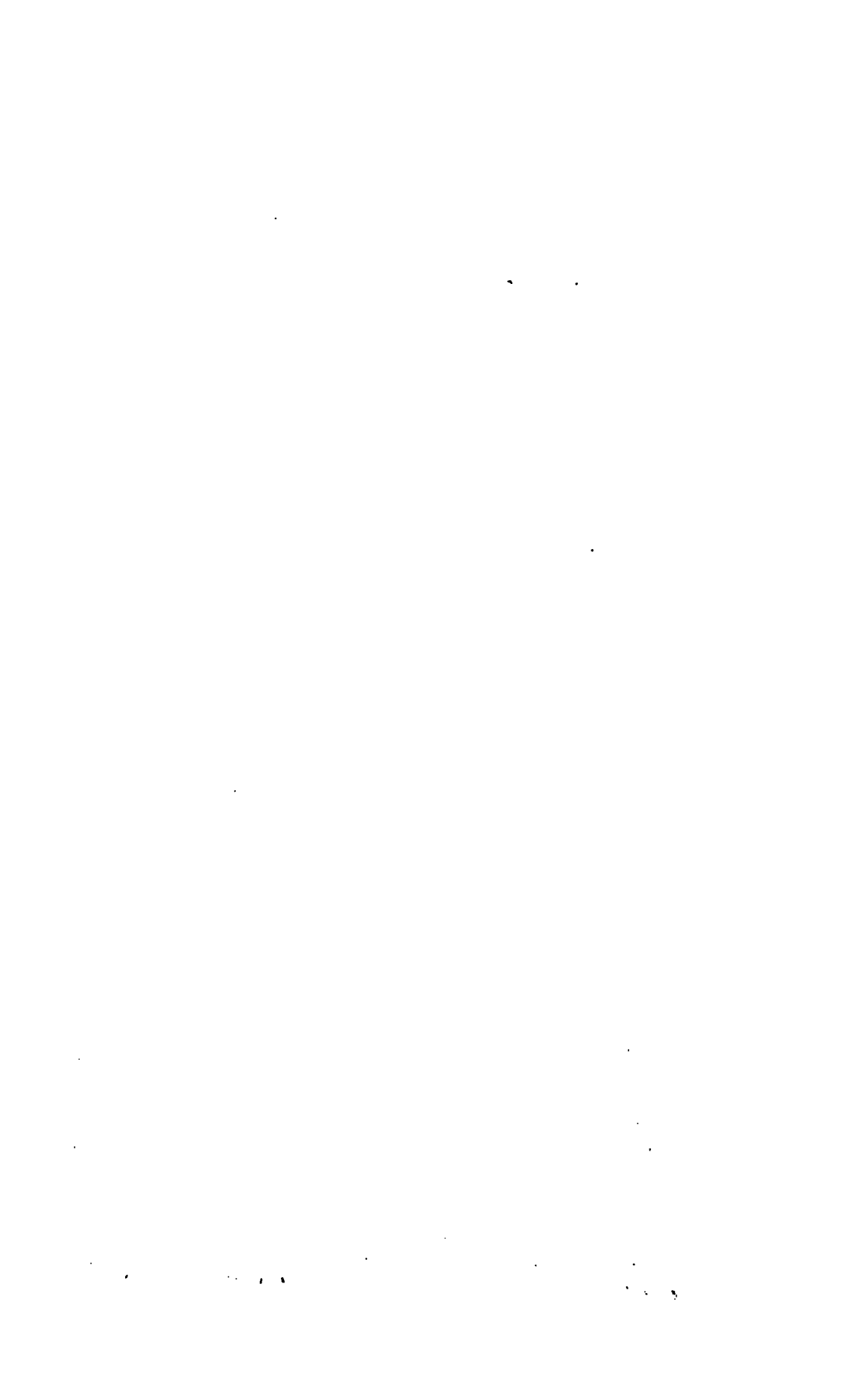
STATEMENT SHOWING AMOUNT PAID THE CITY TREASURER AND WARRANTS DRAWN AGAINST SAME, FROM DEC. 1, 1894, TO DEC. 1, 1895.

1894				
Dec. 1	Bal. in treasury as per last report			\$52,811
Dec. 1	Cash	\$1,000.00		
Dec. 10	Cash	1,000.00		
Dec. 13	Cash	1,000.00		
Dec. 17	Cash	1,000.00		
Dec. 20	Cash	2,000.00		
Dec. 21	Cash	2,000.00		
Dec. 26	Cash	1,000.00		
1895			\$9,000.00	
Jan. 2	Cash	2,000.00		
Jan. 5	Cash	10,000.00		
Jan. 10	Cash	10,000.00		
Jan. 14	Cash	2,000.00		
Jan. 18	Cash	2,000.00		
Jan. 23	Cash	1,000.00		
Jan. 28	Cash	1,000.00		
Feb. 9	Cash	2,000.00	28,000.00	
Feb. 11	Cash	1,000.00		
Feb. 15	Cash	1,000.00		
Feb. 18	Cash	1,000.00		
Feb. 20	Cash	2,000.00		
Feb. 23	Cash	2,000.00		
Feb. 25	Cash	1,000.00		
Feb. 26	Cash	2,000.00		
Feb. 28	Cash	3,000.00		
March 5	Cash	10,000.00	15,000.00	
March 7	Cash	10,000.00		
March 11	Cash	5,000.00		
March 13	Cash	2,000.00		
March 16	Cash	2,000.00		
March 22	Cash	2,000.00		
March 26	Cash from County Treasurer on account of frontage tax	18,629.76		
March 29	Cash	2,000.00	51,629.76	
April 6	Cash	2,000.00		
April 8	Cash	1,000.00		
April 13	Cash	1,000.00		
April 18	Cash from County Treasurer on account of frontage tax	625.00		
April 19	Cash	1,000.00		
April 20	Cash	3,000.00		
April 25	Cash	1,000.00		
April 29	Cash	2,000.00	11,625.00	
May 4	Cash	1,000.00		
May 7	Cash	1,000.00		
May 8	Cash	1,000.00		
May 9	Cash	3,000.00		
May 16	Cash	1,000.00		
May 18	Cash	1,000.00		
May 23	Cash	1,000.00	9,000.00	
June 3	Cash	1,000.00		
June 4	Cash	1,000.00		
June 7	Cash	1,000.00		
June 12	Cash	1,000.00		
June 17	Cash	1,000.00		
June 21	Cash	1,000.00		
June 24	Cash	1,000.00		
June 28	Cash	1,000.00		
June 29	Cash	2,000.00	10,000.00	
July 5	Cash	5,000.00		
July 8	Cash from County Treasurer on account of frontage tax	15,000.00		
July 9	Cash	10,000.00		
July 11	Cash	5,000.00		

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OF THE CITY OF ST. PAUL, FOR 1895.

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ACCOUNT WITH CITY TREASURER—Concluded.

July 15.....	Cash.....	\$5,000.00		
July 18.....	Cash.....	2,000.00		
July 25.....	Cash.....	1,000.00		
July 25.....	Cash from County Treasurer on account of frontage tax.....	100,000.00		
July 26.....	Cash.....	1,000.00		
July 30.....	Cash.....	2,000.00	146,000.00	
Aug. 7....	Cash.....	1,000.00		
Aug. 10.....	Cash.....	1,000.00		
Aug. 13.....	Cash from County Treasurer on account of frontage tax.....	5,476.29		
Aug. 15.....	Cash.....	1,000.00		
Aug. 17.....	Cash.....	1,000.00		
Aug. 19.....	Cash.....	1,000.00		
Aug. 21.....	Cash.....	1,000.00		
Aug. 24.....	Cash.....	2,000.00		
Aug. 28.....	Cash.....	2,000.00		
Aug. 31.....	Cash.....	2,000.00	17,476.29	
Sept. 6....	Cash.....	10,000.00		
Sept. 9.....	Cash.....	10,000.00		
Sept. 11.....	Cash.....	2,500.00		
Sept. 13.....	Cash.....	6,000.00		
Sept. 17.....	Cash.....	2,500.00		
Sept. 20.....	Cash.....	2,000.00		
Sept. 26.....	Cash.....	1,000.00		
Sept. 28.....	Cash.....	2,000.00		
Sept. 30.....	Cash.....	1,000.00	37,000.00	
Oct. 7.....	Cash.....	1,000.00		
Oct. 8.....	Cash.....	1,000.00		
Oct. 12.....	Cash.....	1,000.00		
Oct. 15.....	Cash.....	1,000.00		
Oct. 19.....	Cash.....	1,000.00		
Oct. 25.....	Cash.....	1,000.00		
Oct. 30.....	Cash.....	2,000.00	8,000.00	
Nov. 7....	Cash.....	1,000.00		
Nov. 9.....	Cash.....	1,000.00		
Nov. 14.....	Cash from County Treasurer on account of frontage tax.....	7,440.35		
Nov. 16.....	Cash.....	1,000.00		
Nov. 19.....	Cash.....	1,000.00		
Nov. 22.....	Cash.....	1,000.00		
Nov. 25.....	Cash.....	1,000.00		
Nov. 27.....	Cash.....	2,352.66	15,793.01	
	Total.....			358,524.06
				\$411,336.22



TABLE NO. 5.

WARRANTS DRAWN ON CITY TREASURER FROM DEC. 1, 1894, TO D  
1895.

1894				
Dec. 1.....	Warrants Nos. 6963 to 6964 inclusive.	\$11,909.30		
Dec. 10.....	Warrants Nos. 6965 to 7014 inclusive.	9,322.32		
			\$21,331.64	
1895				
Jan. 1.....	Warrant No. 7013.....	\$4,039.91		
Jan. 11.....	Warrants Nos. 7016 to 7059 inclusive.	5,355.36		
Jan. 16.....	Warrants Nos. 7060 to 7061 inclusive.	3,178.28		
Jan. 25.....	Warrant No. 7062.....	600.00		
			13,171.55	
Feb. 1.....	Warrant No. 7063.....	\$3,321.89		
Feb. 6.....	Warrants Nos. 7064 to 7113 inclusive.	9,115.44		
			12,437.33	
March 1.....	Warrant No. 7114.....	\$3,000.44		
March 2.....	Warrants Nos. 7115 to 7123 inclusive.	25,295.66		
March 8.....	Warrants Nos. 7124 to 7169 inclusive.	2,546.51		
			30,842.61	
April 1.....	Warrant No. 7170.....	\$3,251.82		
April 9.....	Warrants Nos. 7171 to 7214 inclusive.	11,215.13		
April 25.....	Warrants Nos. 7215 to 7217 inclusive.	323.11		
			14,790.06	
May 3.....	Warrant No. 7218.....	\$4,040.00		
May 9.....	Warrants Nos. 7219 to 7263 inclusive.	27,746.96		
May 21.....	Warrants Nos. 7264 to 7276 inclusive.	11,238.26		
May 24.....	Warrant No. 7277.....	1,150.00		
			44,175.22	
June 1.....	Warrant No. 7278.....	\$4,427.78		
June 13.....	Warrants Nos. 7279 to 7328 inclusive.	24,856.43		
June 21.....	Warrants Nos. 7329 to 7334 inclusive.	1,941.28		
			31,025.49	
July 1.....	Warrant No. 7335.....	\$4,943.19		
July 2.....	Warrants Nos. 7336 to 7340 inclusive.	4,091.60		
July 8.....	Warrant No. 7341.....	25,000.00		
July 10.....	Warrants Nos. 7342 to 7368 inclusive.	3,895.33		
July 16.....	Warrants Nos. 7369 to 7384 inclusive.	9,067.73		
			46,997.85	
Aug. 1.....	Warrant No. 7385.....	\$4,325.73		
Aug. 9.....	Warrants Nos. 7386 to 7442 inclusive.	66,390.54		
Aug. 29.....	Warrants Nos. 7443 to 7450 inclusive.	647.87		
			71,374.14	
Sept. 2.....	Warrant No. 7451.....	\$4,587.46		
Sept. 13.....	Warrants Nos. 7452 to 7507 inclusive.	31,296.84		
			35,884.30	
Oct. 1.....	Warrant No. 7508.....	\$4,363.46		
Oct. 7.....	Warrant No. 7509.....	1,525.50		
Oct. 8.....	Warrants Nos. 7510 to 7568 inclusive.	14,435.90		
Oct. 24.....	Warrants Nos. 7569 to 7583 inclusive.	2,128.82		
			22,453.68	
Nov. 1.....	Warrant No. 7584.....	\$4,749.55		
Nov. 2.....	Warrants Nos. 7585 to 7598 inclusive.	5,648.22		
Nov. 13.....	Warrants Nos. 7599 to 7652 inclusive.	7,694.49		
			18,092.26	
				\$362,0
	Balance.....			\$48,0

TABLE NO. 6.

CONTRACTS MADE BY THE BOARD OF WATER COMMISSIONERS FROM  
DEC. 1, 1894, to DEC. 1, 1895.

Date of Contract	With Whom and for What Purpose.	Amount of Contract.	Amount Paid.	Amount Due.
1895				
1 Feb. 28...	South Park Foundry and Machine Co., St. Paul, fire hydrants.....	\$2,182.60	\$2,182.60	
2 Feb. 28...	James Shiely, St. Paul, drayage.....	1,323.32	1,323.32	
3 Feb. 28...	The Western Supply Co., St. Paul, brass goods.....	280.30	280.30	
4 Feb. 28...	South Park Foundry and Machine Co., St. Paul, valves.....	2,693.80	2,693.80	
5 Feb. 28...	Robt. W. Hunt & Co., Chicago, testing water pipe.....	571.08	571.08	
6 Feb. 28...	St. Paul Plow Co., St. Paul, special castings.....	1,338.76	1,338.76	
7 Feb. 28...	N. W. Wheel and Foundry Co., St. Paul, service stop and valve boxes.....	1,360.60	1,360.60	
8 March 13	E. P. Allis Co., Milwaukee, Wis., valve cages for pumps.....	600.00	600.00	
9 March 14	Howard-Harrison Iron Co., Bessemer, Ala., 16" 24" and 30" iron pipe.....	29,779.36	29,779.36	
10 March 14	Shickle, Harrison & Howard Iron Co., St. Louis, Mo., 6" 8" and 12" iron pipe.....	13,762.26	13,762.26	
11 March 26	South Park Foundry and Machine Co., St. Paul, special loam castings.....	827.17	827.17	
12 April 10...	The Western Supply Co., St. Paul, pig lead and lead pipe.....	3,567.10	3,567.10	
13 April 10...	Theophil Vandiac, St. Paul, hauling coal Vadnais Lake.....	101.86	101.86	
14 April 10...	South Brooklyn Steam Engine Wks, Brooklyn, N. Y., condenser.....	390.00	390.00	
15 April 29...	Patrick Doherty, St. Paul, laying water mains, Division 1.....	4,258.25	3,832.43	\$425.82
16 April 29...	Million & Young, St. Paul, laying water mains, Divisions 2 and 3.....	9,796.13	8,816.52	979.61
17 June 17...	E. P. Allis Co., Milwaukee, Wis., pumping engine for Vadnais Lake.....	7,500.00	3,750.00	3,750.00
18 June 17...	A. P. Smith, Newark, N. J., No. 1 tapping machine.....	960.00	960.00	
19 June 19...	J. F. McCarthy, sinking artesian well at Centerville.....	1,400.00		1,400.00
20 July 17...	P. H. Thornton, St. Paul, wire fence right-of-way.....	1,726.13	1,726.13	
21 July 17...	J. D. Moran Man'g and Construction Co., St. Paul, sandrock tunnelling, etc.....	975.40	975.40	
22 July 17...	Ransome Subway Co., Chicago, Ill., conduit to Otter Lake.....	8,910.00	3,825.00	5,085.00
23 July 18...	N. W. Shot and Lead Works, St. Paul, pig lead.....	717.18	717.18	
24 July 31...	St. Paul Plow Co., St. Paul, specials for well plant at Vadnais Lake.....	899.70	899.70	
25 Aug. 10...	Chas. Stone, St. Paul, pump well, etc., Vadnais Lake.....	3,875.00	2,295.00	1,580.00
26 Aug. 10...	J. D. Moran Man'g and Construction Co., St. Paul, service trenches on W. Fifth street.....	452.00	452.00	
27 Aug. 16...	The Western Supply Co., St. Paul, 10 tons ex. strong lead pipe.....	713.75	713.75	
28 Sept. 24...	Pioneer Fuel Co., fuel.....	6,400.00	1,371.36	5,028.64
29 Oct. 28...	John Martin Lumber Co., lumber.....	334.61	257.61	77.00
30 Nov. 13...	St. Paul Building Co., addition to pumping house Vadnais Lake.....	397.00		397.00
		\$108,093.36	\$89,370.29	\$18,723.07

## CONTRACTS—Continued.

CONTRACTS MADE PREVIOUS TO DEC. 1, 1894, AND FOR WHICH FINAL SETTLEMENT WAS NOT MADE AT TIME OF LAST ANNUAL REPORT.

Date of Contract	With Whom and for What Purpose.	Amount due Dec. 1, 1894.	Amount Paid.	Amount Due.
1891. July 27...	Andrew Toomey, St. Paul, engine house West St. Paul.....	\$50.00		\$50.00
1894. May 2....	Howard-Harrison Iron Co., Bessemer, Ala., cast iron water pipe.....	395.98	\$395.98	
Sept. 4....	Pioneer Fuel Co., St. Paul, coal and wood	5,245.59	5,245.59	
Sept. 14...	J. F. McCarty, St. Paul, artesian well..	561.90	561.90	
Nov. 2....	P. H. Thornton, St. Paul, conduit bet. Pleasant and Otter Lakes.....	3,862.00	3,862.00	
		\$10,115.47	\$10,065.47	\$50.00

TABLE NO. 7.

BOND ACCOUNT DECEMBER 1, 1895.

Date of Legislative Acts Authorizing Issue of Bonds.	Amount of Bonds Authorized	Date of Bonds Issued	When Due	Amount of Bonds Issued.	Rate Per Cent.	INTEREST PAYABLE.												Total Annual Interest	
						December 1	January 2	February 1	March 2	April 1	May 2	June 1	July 2	August 1	September 1	October 1	November 2		
Feb. 10, 1881	\$600,000	June 1, 1882	30 years	\$350,000	4	\$7,000							\$7,000						\$14,000
Jan. 26, 1883	500,000	Aug. 1, 1883	30 years	150,000	5			\$3,750							\$3,750				7,500
Feb. 21, 1885	800,000	Apr. 1, 1884	25 & 30 yrs.	600,000	5					\$15,000							\$15,000		30,000
Jan. 31, 1887	200,000	Apr. 1, 1885	30 years	400,000	5					10,000							10,000		20,000
Jan. 31, 1887	160,000	May 2, 1887	30 years	200,000	4½						\$4,500							\$4,500	9,000
Mch. 29, 1889	300,000	Mch. 1, 1888	30 years	300,000	4½				\$6,750						\$6,750				13,500
		Jan. 1, 1889	30 years	100,000	4½	\$2,250							\$2,250						4,500
		Jan. 2, 1889	30 years	160,000	4½	3,600							3,600						7,200
		May 1, 1889	30 years	100,000	4½						2,250							2,250	4,500
		May 1, 1890	30 years	100,000	4						2,000							2,000	4,000
	\$2,560,000			\$2,460,000		\$7,000	\$5,850	\$3,750	\$6,750	\$25,000	\$8,750	\$7,000	\$5,850	\$3,750	\$6,750	\$25,000	\$8,750		\$114,200

TABLE NO. 10.

STATEMENT SHOWING AMOUNT DUE THE BOARD OF WATER COMMISSIONERS ON DECEMBER 1, 1895.

From City of St. Paul.			
Water for fire purposes from Dec. 1, 1891, to June 1, 1892.....	\$28,401.58		
Water for fire purposes from June 1, 1892, to Dec. 1, 1892.....	29,229.79		
Water for fire purposes from Dec. 1, 1892, to June 1, 1893.....	30,540.89		
Water for fire purposes from June 1, 1893, to Dec. 1, 1893.....	31,607.77		
Water for fire purposes from Dec. 1, 1893, to June 1, 1894.....	31,773.12		
Water for fire purposes from June 1, 1894, to Dec. 1, 1894.....	32,307.00		
Water for fire purposes from Dec. 1, 1894, to June 1, 1895.....	32,700.16		
Water for fire purposes from June 1, 1895, to Dec. 1, 1895.....	33,204.95		
		\$249,771.21	
Premiums received and retained by the City on the \$160,000 of bonds issued in Jan., 1889, to redeem the bonds of the old St. Paul Water Co. of like amount, assumed by the City at the time of the purchase of the works.....		5,393.77	
Re-laying of water mains caused by change of grade.....			
On Mt. Airy between Valley and Warren.....	\$248.12		
On Fairview between Jackson and Mt. Airy.....	134.25		
On E. Sixth, between Maria and Hoffman.....	399.75		
On E. Sixth, between Broadway and Olive.....	674.37		
On Flandrau, at Harvester.....	65.00		
Changing main at Como avenue bridge.....	760.58		
		2,282.07	
For putting in public fountains.....	43.70		
Amount due for hydrant stream.....	44.00		
Balance..... 1894, \$340.00			
For water for park fountains all 1895, 815.00	1,155.00		
		1,242.70	
Repairing water mains broken by sewer contractors (claims filed with city comptroller).....			\$258,689.75
Balance frontage tax assessment for '84-5-6-7-8.....	\$1,229.42		114.14
Balance frontage tax assessment for 1889.....	240.56		
Balance frontage tax assessment for 1890.....	2,228.45		
Balance frontage tax assessment for 1891.....	1,953.80		
Balance frontage tax assessment for 1892.....	2,202.99		
Balance frontage tax assessment for 1893.....	1,697.98		
Balance frontage tax assessment for 1894.....	35,384.73		
Balance frontage tax assessment for 1895.....	125,374.26		
		\$170,312.22	
From Builders.....		150.00	
From service connections.....		397.98	
Street sprinkling for 1895.....		18,407.53	
			189,267.73
Total.....			\$448,071.62

TABLE NO. 11.  
FRONTAGE TAX ACCOUNT COLLECTIONS ABATEMENTS BALANCE DUE DECEMBER 1, 1895.

RECEIPTS.	1894-5-6-7 and 1888	1889	1890	1891	1892	1893	1894	1895	TOTAL.
March 26, 1895.....	\$5.00	\$5.00	\$61.26	\$674.46	\$4,063.04	\$11,151.71	\$2,669.29	.....	\$18,629.76
April 18, 1895.....	.....	.....	.....	.....	625.00	.....	.....	.....	625.00
July 8, 1895.....	.....	.....	.....	.....	.....	.....	15,000.00	.....	15,000.00
July 25, 1895.....	20.84	30.25	164.48	245.44	779.17	19,041.99	79,717.83	.....	100,000.00
August 13, 1895.....	.....	.....	.....	.....	750.00	.....	4,726.29	.....	5,476.29
November 14, 1895.....	.....	19.96	123.50	399.81	1,251.31	1,785.19	3,860.58	.....	7,440.35
Total receipts.....	25.84	55.21	349.24	1,319.71	7,468.52	31,978.89	105,973.99	.....	147,171.40
Amount due Dec. 1, 1894, as per last report.....	1,235.26	295.77	2,577.72	3,273.51	9,671.51	33,676.87	141,358.72	.....	192,109.36
Amount of 1895 assessment collected in 1896.....	.....	.....	.....	.....	.....	.....	.....	125,374.26	\$44,937.96 125,374.26
Amount due Dec. 1, 1895.....	\$1,229.42	\$240.56	\$2,228.48	\$1,953.80	\$2,202.99	\$1,697.98	\$35,384.73	\$125,374.26	\$170,312.22

TABLE NO. 12.

## SINKING FUND INVESTMENTS IN CITY TAX LEVY CERTIFICATES.

Date of Investment.	Date of Certificates.	When Due.	Certificate Numbers.	No. of Certificates.	Interest.	Amount of Certificates.
Feb. 20, 1895..	Jan. 15, 1895..	June 15, 1896	174 to 183 incl.	10 5		5,000.00
Mch. 15, 1895..	Jan. 15, 1895..	June 15, 1896	224 to 226 incl.	3 5		1,500.00
May 15, 1895..	Jan. 15, 1895..	June 15, 1896	228 to 230 incl.	3 5		1,500.00
May 16, 1895..	Mch. 15, 1895..	July 15, 1896..	986 to 989 incl.	4 5		2,000.00
June 17, 1895..	June 15, 1895..	June 15, 1896	2003 to 2114 incl.	112 3		56,000.00
July 8, 1895....	Mch. 15, 1895..	July 15, 1896..	1035.....	1 5		500.00
July 8, 1895....	June 15, 1895..	June 15, 1896	2156 to 2204 incl.	49 5	Per Cent.	24,500.00
			2570 to 2687 incl.			
			2927 to 2944 incl.			
			2953 to 3018 incl.			
July 17, 1895..	July 15, 1895....	Aug. 15, 1896	3019 to 3022 incl.	206 5		103,000.00
Oct. 16, 1895..	July 15, 1895....	Aug. 15, 1896	2948 to 2951 incl.	4 5		2,000.00
						\$196,000.00

Amount uninvested.....\$140,910.67

TABLE NO 13.

Pay Roll for Year Include Salaries of Officers, En- gineers, Firemen, In- spectors and Laborers.			Salaries of Engineers, Firemen and Keepers at the Various stations.					
Month	No. of Men.	Total Amt. of Pay Roll	M'Carron Lake Station.	Vadnais Lake Station.	Baldwin Lake Station.	West St. Paul Station.	Rescr- Voire.	TOTAL.
1894								
Nov....	172	\$4,909.30	\$350.00	\$100.00	\$165.00	\$110.00	\$25.00	\$750.00
Dec....	90	4,039.91	302.00	56.67	165.00	110.00	25.00	658.67
1895								
Jan....	67	3,321.89	300.00	50.00	50.00	110.00	25.00	535.00
Feb....	56	3,000.44	300 00	50.00	50.00	110.00	25.00	535.00
March	68	3,251.82	300.00	50.00	50.00	110.00	25.00	535.00
April..	93	4,040.00	300.00	50.00	50.00	110.00	25.00	535.00
May....	101	4,427.78	300.00	50.00	95.00	110.00	55.00	610.00
June....	104	4,943.19	300.00	50.00	165.00	110.00	40.00	665.00
July....	97	4,325.73	300.00	91.66	165.00	110.00	40.00	706.66
Aug....	105	4,587.46	300 00	100 00	165.00	110.00	40.00	715.00
Sept....	107	5,888.96	300.00	100.00	165.00	110.00	40.00	715.00
Oct....	107	4,749.55	300.00	100.00	165.00	110.00	40.00	715.00
	1,167	\$51,486.03	\$3,652.00	\$848.33	\$1,450.00	\$1,320.00	\$405.00	\$7,675.33

TABLE NO. 14.

THE FOLLOWING TABLE SHOWS THE NUMBER OF APPLICATIONS MADE FOR WATER SERVICES ANNUALLY FROM 1869 TO DATE.

Year.	High Service.	Low Service.	Total.
1869.....		34	
1870.....		321	
1871.....		250	
1872.....		164	
1873.....		131	
1874.....		153	
1875.....		95	
1876.....		85	
1877.....		65	
1878.....		50	
1879.....		180	
1880.....		167	
1881.....		164	
1882.....		264	
1883.....		301	2426
1884.....	184	336	500
1885.....	644	363	1009
1886.....	639	369	1008
1887.....	747	325	1072
1888.....	812	406	1218
1889.....	1327	491	1818
1890.....	1071	336	1407
1891.....	811	264	1075
1892.....	671	210	881
1893.....	474	151	625
1894.....	363	139	502
1895.....	390	311	701
	8113	6129	14242

TABLE NO. 15.

## PUMPING PLANTS.

EXPENSE MAINTAINING THE FOUR (4) PUMPING STATIONS AND RESERVOIR.

Station.	Salaries.	Fuel.	Waste and Machine Oil.	Repairs.	Kerosene Oil.	Total.
McCarron L. St'n	\$3,652.00	\$5,034.79	\$243.57	\$269.09	\$5.20	\$9,204.65
Baldwin Lake "	1,450.00	2,524.46	23.77	45.19	27.08	4,070.50
Vadnais Lake St'n	848.33	1,105.00	47.50	31.58	11.64	2,044.05
West St. Paul St'n	1,320.00	299.50	5.27	26.47	9.08	1,660.32
Reservoir.....	405.00					405.00
	\$7,675.33	\$8,963.75	\$320.11	\$372.33	\$53.00	\$17,384.52



TABLE NO. 16.

METERS IN SERVICE DECEMBER 1, 1895.

KIND OF METER.	SIZE.								TOTAL
	½	¾	1	1½	2	3	4		
Worthington (improved).....	112	112	35	43	7	4	2	315	
Worthington (old style).....	7	16	9	8	2			42	
Union (rotary).....	74	26	14	8		1	2	125	
Nash.....	10	2						12	
Crown.....	71	16	24	31	10	1	1	154	
Crown "A A".....	97		5	2				104	
Empire.....	15	19	45	33		10		123	
Empire "A".....		5	1	2			1	8	
Gem.....							1	2	
Thomson.....		18	5	1				24	
Thomson "B".....	1	45	14	4	1	2		67	
Hersey.....		30	34	26	21	12	2	125	
Frost.....			1					1	
Trident.....		4	1					5	
Westinghouse.....				1		1		2	
Total.....	16	492	273	154	114	44	9	7	1109

TABLE NO. 17.

SHUTTING OFF AND TURNING ON WATER FROM DEC. 1, 1894, TO DEC. 1, 1895.

	High Service.	Low Service.	Total.
Shut off for repairs.....	276	285	561
Shut off for non-payment.....	209	208	417
Shut off for violation of rules.....			
Shut off for vacant premises.....	619	489	1,108
Total.....	1,104	982	2,086
Turned on old services.....	1,119	974	2,093
Turned on new services.....	365	131	496
Turned on for builders.....	11	10	21
Total.....	1,495	1,115	2,610

Total services shut off and turned on for year ending	December 1, 1895.....	4,696
	December 1, 1894.....	4,932
	December 1, 1893.....	4,477
	December 1, 1892.....	4,470
	December 1, 1891.....	4,743
	December 1, 1890.....	3,919
	December 1, 1889.....	3,978
	December 1, 1888.....	2,833
	December 1, 1887.....	2,541
	December 1, 1886.....	2,394
	December 1, 1885.....	2,311
	December 1, 1884.....	1,014

TABLE NO. 18.

SHOWING THE DIFFERENT KINDS AND SIZES OF METERS BELONGING TO  
THE CITY AND PRIVATE PARTIES IN SERVICE AND  
ON HAND DEC 1, 1895.

KIND OF METERS.	Size in Inches.	Property of City.			Private Property.			Grand Total of Meters In Service.	Grand Total of Meters In Shop.	Grand Total of all Meters.
		In Service.	At Work Shop.	Total.	In Service.	At Work Shop.	Total.			
Worthington improved.....	4				2		2	2		2
Worthington improved.....	3				4		4	4		4
Worthington improved.....	2	3		3	4		4	7		7
Worthington improved.....	1½	38	1	39	5		5	43	1	44
Worthington improved.....	1	33		33	2		2	35		35
Worthington improved.....	¾	109		109	3		3	112		112
Worthington improved.....	¾	95		95	17		17	112		112
Worthington old style.....	3		3	3					3	3
Worthington old style.....	2	2		2				2		2
Worthington old style.....	1½	8	1	9				8	1	9
Worthington old style.....	1	8	2	10	1		1	9	2	11
Worthington old style.....	¾	16		16				16		16
Worthington old style.....	¾	7		7				7		7
Union Rotary.....	4	2		2				2		2
Union Rotary.....	3	1		1				1		1
Union Rotary.....	1½	7		7	1		1	8		8
Union Rotary.....	1	14		14				14		14
Union Rotary.....	¾	26	1	27				26	1	27
Union Rotary.....	¾	74	1	75				74	1	75
Nash.....	¾	2		2				2		2
Nash.....	¾	10		10				10		10
Crown.....	4		1	1	1		1	1	1	2
Crown.....	3	1		1				1		1
Crown.....	2	9		9	1		1	10		10
Crown.....	1½	31	1	32				31	1	32
Crown.....	1	24	3	27				24	3	27
Crown.....	¾	16	1	17				16	1	17
Crown.....	¾	69		69	2		2	71		71
Crown.....	¾	1		1				1		1
Crown A. A.....	1½	2		2				2		2
Crown A. A.....	1	5		5				5		5
Crown A. A.....	¾	97	15	112				97	15	112
Empire.....	4	1		1				1		1
Empire.....	2	10	1	11				10	1	11
Empire.....	1	33	3	36				33	3	36
Empire.....	¾	45	1	47				45	1	46
Empire.....	¾	19	1	20				19	1	20
Empire.....	½	15		15				15		15
Empire A.....	1	2		2				2		2
Empire A.....	¾	1	3	4				1	3	4
Empire A.....	¾	5		5				5		5
Gen.....	4				1		1	1		1
Gen.....	3		1	1	1		1	1	1	2
Thomson.....	1	1	2	3				1	2	3
Thomson.....	¾	5	1	6				5	1	6
Thomson.....	¾	18		18				18		18
Thomson B.....	2	1		1	1		1	2		2
Thomson B.....	1½	1	1	2				1	1	2
Thomson B.....	1	4		4				4		4
Thomson B.....	¾	14		14				14		14
Thomson B.....	¾	45	2	47				45	2	47
Thomson B.....	½	1		1				1		1
Hersey.....	3	2		2				2		2
Hersey.....	2	12		12				12		12
Hersey.....	1½	21	2	23				21	2	23
Hersey.....	1	26	4	30				26	4	30
Hersey.....	¾	34	1	35				34	1	35
Hersey.....	¾	30	2	32				30	2	32
Hersey Disc.....	2		1	1					1	1

## SIZES OF METERS---Continued.

KIND OF METERS.	Size in Inches.	Property of City.			Private Property.			Grand Total of Meters In Service.	Grand Total of Meters In Shop.	Grand Total of all Meters.
		In Service.	At Work Shop.	Total.	In Service.	At Work Shop.	Total.			
Hersey Disc.....	1½		2	2					2	2
Frost.....	¾	1						1		1
Sport.....	¾		1	1					1	1
Trident.....	1		1	1					1	1
Trident.....	¾	1	1	2				1	1	2
Trident.....	¾	4	5	9				4	5	9
Westinghouse.....	2	1		1				1		1
Westinghouse.....	1½		1	1					1	1
Westinghouse.....	1	1	4	5				1	4	5
Westinghouse.....	¾		2	2					2	2
		1,063	74	1,137	46		46	1,109	74	1,183

TABLE NO. 19.  
EXPENSE FOR MAINTAINING PUMPING STATIONS AND RESERVOIR FOR YEARS 1891-2-3-4 and 5.  
MCCARRON LAKE STATION.

Year.	Salaries.		Fuel.	Machine Oil and Waste.	Repairs.	Kero- sine Oil	Total.	WATER PUMPS.		FUEL, COAL, ETC.		Daily Increase in Pumping Gallons.
								Annually.	Daily.	Annually.	Daily.	
1891.....	\$3,540.00	\$4,702.12		231.86	230.46	\$38.50	\$8,725.14	1,106,034.800	3,030.232	2,134,000	5845	871,090
1892.....	3,775.00	6,400.86		302.36	37.82	36.75	9,352.82	1,071,130.320	2,834.603	2,036,734	5580	623,070
1893.....	3,763.00	6,413.20		279.50	329.46	Electric	9,615.32	1,298,551.200	3,575.674	2,147,888	5844	326,000
1894.....	3,766.50	6,012.85		237.99	351.12	5.20	9,313.66	1,300,813.800	3,882.110	2,345,731	6427	338,609
1895.....	3,652.00	5,034.79		243.57	269.09	5.20	9,204.65	1,536,912.600	4,210,719	2,536,020	6948	

BALDWIN LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs.	Kero- sine Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891.....	\$1,507.16	\$4,998.44	\$51.98	\$77.39	\$22.14	\$6,657.11	1,983,034.500	8,077.535	Coal 150,325		
1892.....	1,052.08	941.00	56.28	56.12	11.90	2,137.39	1,153,794.000	9,470.266	Wood 7974		
1893.....	1,145.66	778.42	45.18	363.99	10.35	2,343.60	1,104,158.600	9,219.623	" 576		
1894.....	1,245.66	1,182.05	49.80	251.63	10.30	2,739.44	1,449,360.900	9,662.406	" 4619 1/2		
1895.....	1,450.00	2,524.46	23.77	45.19	27.08	4,070.50	1,914,949.800	8,524.653	" 821		

## PUMPING STATIONS AND RESERVOIR—Continued.

## VADNAIS LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs.	Kerosene Oil.	Total.	Water Pumped.		Fuel, Coal, Etc.	
							Annually.	Daily.	Annually.	Daily.
1891.....	\$1,100.00	\$1,081.68	\$50.75	\$197.12	\$6.36	\$2,435.91	207,750.000	.....	246,800	.....
1892.....	1,020.00	1,305.25	73.71	102.19	25.90	3,127.05	.....	.....	.....	.....
1893.....	600.00	.....	.....	21.35	.....	621.35	.....	.....	.....	.....
1894.....	912.50	1,508.99	21.06	216.75	20.60	2,679.90	337,160.000	.....	624,387	.....
1895.....	848.33	1,105.00	47.50	31.58	11.64	2,044.05	237,043.000	.....	550,000	.....

## WEST ST. PAUL STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs.	Kerosene Oil.	Total.	Water Pumped.		Fuel, Coal, Etc.	
							Annually.	Daily.	Annually.	Daily.
1893.....	\$1,237.75	\$589.63	\$29.72	\$23.50	\$15.10	\$1,895.70	10,015.722	27,440	209,043	571
1894.....	1,320.00	328.96	2.88	28.83	14.20	1,694.87	9,123.480	24,990	169,220	463
1895.....	1,320.00	299.50	5.27	26.47	9.08	1,660.32	10,520.640	28,848	174,600	479

## RESERVOIR.

Year	Salaries.	Year.	Salaries.
1891.....	.....	1894.....	\$405.00
1892.....	.....	1895.....	.....
1893.....	.....	.....	\$405.00
			405.00

TABLE NO. 20.  
HOSE VIOLATIONS, 1895.

Violation.	High.	Low.	Total.
Hose, 1, violation.....	136	87	223
Hose, 2 violations.....	5	1	6
Hose, 3 violations.....	1		1
Reel, 6 to 9 P. M., 1 violation.....	34		34
Reel, 6 to 9 P. M., 2 violations.....	6		6
Reel, 6 to 9 P. M., 3 violations.....	2		2
Reel, 6 to 9 P. M., 4 violations.....	2		2
Hose all day, 1 violation.....	1		1
Hose all day, 2 violations.....	1		1
Total.....	188	88	276

COMPARATIVE STATEMENT OF HOSE VIOLATIONS FOR 1894 AND 1895.

Violation.	1894.			1895.		
	High.	Low.	Total.	High.	Low.	Total.
Hose, 1 violation.....	200	129	329	136	87	223
Hose, 2 violations.....	28	16	44	5	1	6
Hose, 3 violations.....	13	7	20	1		1
Hose, 4 violations.....	2	3	5			
Hose, 5 violations.....	1	2	3			
Hose, 7 violations.....	2	1	3			
Reel, 6 to 9 P. M., 1 violation.....	185	50	235	34		34
Reel, 6 to 9 P. M., 2 violations.....	22	14	36	6		6
Reel, 6 to 9 P. M., 3 violations.....	6	2	8	2		2
Reel, 6 to 9 P. M., 4 violations.....	2	1	3	2		2
Reel, 6 to 9 P. M., 7 violations.....		1	1			
Hose all day, 1 violation.....	162	34	196	1		1
Hose all day, 2 violations.....	23	9	32	1		1
Hose all day, 3 violations.....	2	4	6			
Hose all day, 4 violations.....		1	1			
Total.....	648	274	922	188	88	276

TABLE NO. 21.  
STATEMENT SHOWING THE NUMBER OF MILES OF PIPE LAID ANNUALLY TO DATE, EXPENSE OF SAME, FRONTAGE TAX, ETC.

	MAINS LAID.		Expenditure on account of laying mains	Construction outside of city	Annual maintenance	Number of applications or taps	Annual receipts from consumers	Increase.	Frontage tax receipts	Number of direct hydrants in use	Frontage tax assessment	Number of years frontage tax has been paid incl. 1894 tax	Years more to pay on basis 10 years
	Miles	Feet											
To August 10, 1882 <sup>a</sup>	23	1662				2007				188			
From Aug. 10, '82, to Dec. 1, '82	4	3793	a \$12,300.44	\$1,566.80	\$1,674.58	118				198			
From Dec. 1, '82, to Dec. 1, '83	16	1220	157,003.97	100,021.19	6,854.30	301				236		11	
From Dec. 1, '83, to Dec. 1, '84	23	2383	207,169.31	609,686.93	11,473.84	500				316	\$12,852.76	10	
From Dec. 1, '84, to Dec. 1, '85	18	3334	207,576.90	40,144.36	19,273.88	1009			\$12,269.90	491	20,590.06	9	1
From Dec. 1, '85, to Dec. 1, '86	20	2207	338,694.54	32,657.46	17,976.64	1008			32,495.91	673	33,787.68	8	2
From Dec. 1, '86, to Dec. 1, '87	28	3392	225,443.70	32,973.47	22,806.98	1072	\$116,635.23	12,976.71	32,495.91	864	48,368.88	7	3
From Dec. 1, '87, to Dec. 1, '88	35	4963	288,018.19	97,736.31	23,799.81	1218	12,720.01	6,084.18	53,062.60	1134	68,669.10	6	4
From Dec. 1, '88, to Dec. 1, '89	26	4085	257,640.58	20,690.68	26,132.99	1818	124,920.91	13,952.71	53,062.60	1471	76,706.21	5	5
From Dec. 1, '89, to Dec. 1, '90	5	3696	211,013.64	26,026.29	36,082.78	1407	138,913.61	20,648.44	73,079.70	1748	99,660.96	4	6
From Dec. 1, '90, to Dec. 1, '91	14	3228	46,029.69	34,937.07	34,473.82	1075	159,561.29	11,608.40	88,987.80	1813	117,847.96	3	7
From Dec. 1, '91, to Dec. 1, '92	8	1946	63,323.15	41,327.25	35,349.82	881	171,164.69	6,430.62	107,899.11	1968	123,846.43	2	8
From Dec. 1, '92, to Dec. 1, '93	6	646	42,287.17	4,590.40	36,404.84	625	177,895.21	1,372.11	112,116.06	2067	135,336.46	1	9
From Dec. 1, '93, to Dec. 1, '94	8	13	81,360.58	6,198.62	39,036.14	502	178,967.32	1,279.20	137,171.40	2200	143,001.73		10
Relaid large mains in 1895	1 <sup>998</sup>	241	2315	\$1,124,185.55	\$354,440.41	14242			\$813,767.51				
Less relaid and mains abandoned	7	3212					Less amount refunded		2,383.34				
Net amount mains	233	4382							\$811,384.17				

a This includes relaying 16-inch pipe on Lafayette avenue near Trout Brook, of regrading street, an expense of \$4,677.97.  
b Pumping station established for high service in fall of 1884.  
c Pumping station established for well plant at Vadnaia lake, also Rice lakes.  
d Pumping station established for high service in West St. Paul in Fall of 1892.  
e This includes laying the 20-inch force main to reservoir.  
f This includes laying 9234 feet of 30-inch supply main on Dale street from reservoir to Dale and Front, at an expense of \$38,365.78.



## LIST OF VOUCHERS PAID FROM DECEMBER 1, 1894, TO DECEMBER 1, 1895.

## DECEMBER, 1894.

No. of Voucher	NAME.	CLAIM.	Amount.
6963	John Wagener, City Treasurer.....	Interest due December 1, 1894.....	\$7,000.00
6964	Jno. Caulfield, Secretary.....	Pay Roll for November, 1894.....	4,909.30
6965	Howard Harrison Iron Co.....	Est. No. 6, iron pipe.....	395.98
6966	National Meter Co.....	Meter Gearing.....	10.60
6967	Thompson Meter Co.....	Meters.....	101.40
6968	The Engineering Record.....	One year's sub. to Mar. 31, 1895.....	5.00
6969	W. H. Viall.....	Hauling coal.....	24.03
6970	Pioneer Press Co.....	Blank books and job printing.....	44.50
6971	Gibben Lumber Co.....	400 cedar posts, Bald Lake.....	24.00
6972	Tierney & Co.....	Hay.....	8.98
6973	H. P. Rugg & Co.....	Pipe fittings.....	14.96
6974	Scott Bros. & McMurphy.....	Placing storm sash, office.....	1.45
6975	Kenny Bros.....	Repairing boilers.....	9.00
6976	P. V. Dwyer Bros. & Co.....	One Crown meter.....	31.95
6977	Goodyear Rubber Co.....	Rubber boots, &c.....	36.34
6978	J. G. Duggan.....	Sharpening tools, &c.....	23.90
6979	Jno. Martin Lumber Co.....	Lumber.....	23.10
6980	P. H. Kelly Mercantile Co.....	Oil.....	33.40
6981	Register of Deeds, Ramsey County.	Recording maps of right of way, Otter Lake.....	2.00
6982	D. L. Bell.....	Lime and cement.....	14.80
6983	Bazille & Partridge.....	Lettering right of way signs.....	1.75
6984	Eschelman & Iten.....	Horse Shoeing.....	2.00
6985	F. W. Luley & Son.....	Tallow.....	1.00
6986	H. R. Sheire.....	Hay.....	12.00
6987	P. N. Lindquist.....	Horse shoeing.....	7.00
6988	Mitsel Wagon & Carriage Co.....	Sharpening tools, &c.....	45.50
6989	Farwell, Ozmun, Kirk & Co.....	Powder, fuse and tools.....	21.66
6990	N. W. Telephone Ex. Co.....	Rent of office telephones.....	6.00
6991	Taylor-Craig Corporation.....	Weir box, storm, doors, for Vad- nais, &c.....	13.00
6992	N. Feyen.....	Hauling pipe, &c.....	18.98
6993	James Gilfillan.....	Rent of storage lot, one month.....	25.00
6994	Robinson & Cary Co.....	Pipe and pipe fittings.....	34.79
6995	Geo. J. Mitsch & Co.....	Supplies.....	8.80
6996	Pioneer Fuel Co.....	Est. No. 3, fuel.....	250.34
6997	Union Brass & Metal Mfg. Co.....	Repairing valves.....	80.70
6998	Robert Seeger.....	Gasoline.....	.80
6999	Standard Oil Co.....	Cylinder oil.....	18.87
7000	Martin Feist.....	Lunch for men cleaning conduit.....	3.50
7001	St. Paul Foundry Co.....	Manhole covers.....	40.00
7002	Jameson, Heyner & Co.....	Oats.....	63.55
7003	P. Pederson.....	Rep. tap machine, &c.....	3.15
7004	Griggs Bros.....	Hay.....	59.71
7005	Brown, Treacy & Co.....	Stationery and printing.....	28.60
7006	Ogden, Merrill & Greer.....	Lantern fixtures.....	.27
7007	Adam Decker & Co.....	Chimney cap, Vadnais.....	6.25
7008	D. Ramaley & Son.....	Job printing.....	3.00
7009	Allen & Co.....	Livery for surveyors, &c.....	51.00
7010	Minnesota Engine Works.....	Repairs.....	10.02
7011	P. H. Thornton.....	Est. No. 1, Otter Lake conduit.....	1,164.61
7012	Jno. Wagener, City Treasurer.....	Interest due January 1, 1895.....	5,850.00
7013	Jno. Caulfield, Secretary.....	Cash advanced, per voucher.....	123.18
7014	J. F. McCarthy.....	Est. No. 1 and final, wells at Centerville.....	561.90
Total.....			\$21,231.62



## LIST OF VOUCHERS—Continued.

JANUARY, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7015	John Caulfield, secretary.....	Pay roll for December, 1894.....	\$4,039.91
7016	Henry Bucher.....	Wood at Baldwin Lake.....	22.00
7017	John Wagener, city treasurer.....	Interest due Feb. 1, 1895.....	8,750.00
7018	D. L. Bell.....	Cement.....	15.40
7019	Robinson & Cary Co.....	Pipe and pipe fittings.....	13.68
7020	J. Arth, for H. J. Helmbach.....	Wood for Baldwin Lake.....	19.94
7021	Charles Lehman.....	Wood for Baldwin Lake.....	77.00
7022	Walter P. Jones.....	Wood for Baldwin Lake.....	22.00
7023	Charles Rehbein.....	Wood for Baldwin Lake.....	30.94
7024	Dr. Carl Wirth.....	Professional services, injured men.....	56.00
7025	H. M. Smyth Printing Co.....	Blank books.....	16.75
7026	P. N. Lindquist.....	Horse shoeing.....	8.00
7027	Adam Decker & Co.....	Hardware for pump house.....	1.60
7028	Allen & Co.....	Livery.....	13.00
7029	Est. Jas. Gilfillan.....	Rent of storage lot.....	25.00
7030	Northwestern Shot and Lead Works.....	Lead pipe.....	139.07
7031	Charles Friend & Son.....	Harness fittings, etc.....	4.95
7032	Fielding & Shepley.....	Relaying pavement.....	20.81
7033	The Western Supply Co.....	Lead pipe.....	16.70
7034	Jefferson & Kasson.....	Lumber.....	23.35
7035	Richard Price.....	Veterinary services.....	2.00
7036	Albrecht Bros.....	Repairing buffalo robe.....	5.00
7037	National Meter Co.....	Meters.....	526.80
7038	St. Paul Fire and Marine Ins. Co.....	Insurance on stable.....	17.00
7039	Eshelman & Iten.....	Horse shoeing.....	2.50
7040	The N. W. Telephone Co.....	Rent of office telephones.....	6.00
7041	Pioneer Press Co.....	Job printing.....	19.25
7042	P. H. Kelly Mercantile Co.....	Oil and candles.....	20.02
7043	Taylor Craig Corporation.....	Carpenter work.....	17.75
7044	Brown, Treacy & Co.....	Stationery, etc.....	16.25
7045	H. P. Rugg & Co.....	Pipe fittings.....	17.27
7046	N. W. Copper and Brass Works.....	Repairing valve.....	.50
7047	Tierney & Co.....	Feed.....	2.45
7048	Cornplanter Oil Co.....	Engine oil.....	11.66
7049	Union Brass and Metal Mfg. Co.....	Repairing gate spindles.....	3.00
7050	Roberts Goss Co.....	Machine work.....	4.15
7051	Robert Seeger.....	Gasoline.....	.80
7052	Pioneer Fuel Co.....	Fuel Est. No. 4.....	274.77
7053	D. Ramaley & Son.....	Job printing.....	19.50
7054	Thos. Fitzpatrick.....	Book rack for meter book.....	1.50
7055	Farwell, Ozmun, Kirk & Co.....	Tools, etc.....	8.03
7056	J. G. Duggan.....	Blacksmithing.....	20.15
7057	Mitsch Wagon and Carriage Co.....	Blacksmithing.....	28.80
7058	Minnesota Engine Works.....	Machine work.....	1.90
7059	John Caulfield, secretary.....	Cash advanced, postage, etc.....	52.14
7060	Alfred Gustafson.....	Land for conduit, Otter to Pleasant Lake.....	800.00
7061	P. H. Thornton.....	Est. No. 2, Otter Lake conduit.....	2,376.28
7062	Joseph Pariscau.....	Land for right-of-way.....	600.00
	Total.....		\$13,171.55

## LIST OF VOUCHERS—Continued.

FEBRUARY, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT
7063	Jno. Caulfield, secretary.....	Payroll for January, 1895.....	\$3,321.89
7064	Jno. Wagener, city treasurer.....	Interest due March 1, 1895.....	6,750.00
7065	Walworth Mfg Co.....	1 No. 1 Hall's pipe cutter.....	25.00
7066	The New England Water Wks Assn	1 year's sub. to Journal to June 1, 1895.....	2.00
7067	N. W. Stamp Works.....	Rubber stamp.....	1.00
7068	American Stamp Works.....	One dating stamp.....	3.00
7069	Miles & Hale.....	Electric bell, office to shop.....	8.00
7070	J. W. Bowden.....	Medicines for man hurt on work.....	4.40
7071	The Globe Co.....	Daily, Nov. 1, '94, to Feb. 1, '95.....	1.50
7072	The N. W. Telephone Ex. Co.....	Rent of two office telephones.....	6.00
7073	Boeringer & Son.....	Drawing paper.....	.60
7074	H. M. Smyth Printing Co.....	Job printing.....	31.50
7075	D. L. Bell.....	Cement.....	5.60
7076	Chas. Friend & Son.....	Saddlery hardware.....	1.70
7077	P. H. Kelly Mer. Co.....	Candles, etc.....	10.40
7078	I. G. Duggan.....	Blacksmithing.....	22.95
7079	P. N. Lindquist.....	Horseshoeing.....	5.00
7080	Est. James Gilfillan.....	Rent of storage lot.....	25.00
7081	Allen & Co.....	Livery.....	5.00
7082	Dispatch Printing Co.....	Advertising.....	8.00
7083	The Morning Call.....	Advertising.....	6.00
7084	Daily Globe.....	Advertising.....	6.00
7085	Pioneer Press Co.....	Advertising.....	5.00
7086	Aug Rehbrin.....	Wood for Baldwin Lake.....	105.13
7087	Joseph Arth.....	Wood for Baldwin Lake.....	101.56
7088	A. Totte.....	Wood for Baldwin Lake.....	22.50
7089	P. Mollitor.....	Wood for Baldwin Lake.....	61.87
7090	Mike Kafka.....	Wood for Baldwin Lake.....	138.19
7091	Jno. Bochm.....	Wood for Baldwin Lake.....	31.63
7092	I. Knusher, Jr.....	Wood for Baldwin Lake.....	58.44
7093	Walter Jones.....	Wood for Baldwin Lake.....	28.88
7094	I. Knusher.....	Wood for Baldwin Lake.....	48.81
7095	Anton Heller.....	Wood for Baldwin Lake.....	66.00
7096	Michael Gross.....	Wood for Baldwin Lake.....	29.56
7097	Chas. B. Anderson.....	Wood for Baldwin Lake.....	48.13
7098	August Thon.....	Wood for Baldwin Lake.....	70.50
7099	P. Hoffman.....	Wood for Baldwin Lake.....	68.00
7100	E. T. Dyer.....	Wood for Baldwin Lake.....	29.56
7101	Fred Wenzell.....	Wood for Baldwin Lake.....	99.00
7102	Robinson & Cary Co.....	Pipe, waste, etc.....	31.16
7103	Robert Seeger.....	Gasoline.....	.40
7104	Standard Oil Co.....	Oil.....	6.75
7105	Jameson, Hevener & Co.....	Corn.....	7.75
7106	Brown, Treacy & Co.....	Stationery.....	4.40
7107	Complanter Oil Co.....	Cylinder oil.....	23.85
7108	Kenny Bros.....	Repairing boiler flues.....	64.72
7109	Farwell, Ozmun, Kirk & Co.....	Tools.....	7.83
7110	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	20.48
7111	The Western Supply Co.....	Lead pipe, etc.....	18.07
7112	Jno. Caulfield, Secretary.....	Cash advanced per receipts.....	110.53
7113	Pioneer Fuel Co.....	Est. No. 5, fuel.....	878.09
Total.....			\$12,437.33

## LIST OF VOUCHERS.—Continued.

MARCH, 1895.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
7114	Jno. Wagener, City Treasurer.....	Pay roll for February, 1895.....	\$3,000.44
7115	Jno. Wagener, City Treasurer.....	Interest due April, 1895.....	25,000.00
7116	The Western Supply Co.....	Pipe and bar tin.....	29.43
7117	Board of Fire Commissioners.....	250 feet condemned hose.....	62.50
7118	Geo. J. Mitsch & Co.....	Supplies.....	8.30
7119	Union Brass & Metal Mfg. Co.....	Brass, gate screw spindles.....	160.50
7120	Eschelman & Iten.....	Horse shoeing.....	2.00
7121	Jno. Rogers, Jr. & Bro.....	Insurance on wood, Baldwin Lake	12.00
7122	H. M. Smyth Printing Co.....	Printing three forms specifications	7.50
7123	The Dispatch Printing Co.....	Advertising for material.....	13.43
7124	A. H. Anderson.....	Wood for Baldwin Lake station..	104.50
7125	R. Kammerer.....	Wood for Baldwin Lake station..	63.25
7126	P. Wenzel.....	Wood for Baldwin Lake station..	26.12
7127	Albert Rehbein.....	Wood for Baldwin Lake station..	129.59
7128	J. Boehm.....	Wood for Baldwin Lake station..	64.62
7129	H. K. Wallan.....	Wood for Baldwin Lake station..	83.18
7130	A. Totte.....	Wood for Baldwin Lake station..	27.50
7131	S. W. Schaefer.....	Wood for Baldwin Lake station..	15.18
7132	Michael Gross.....	Wood for Baldwin Lake station..	24.75
7133	Leon Dupre.....	Wood for Baldwin Lake station..	53.62
7134	F. Lenz.....	Wood for Baldwin Lake station..	45.00
7135	Chas. Rehbein.....	Wood for Baldwin Lake station..	109.31
7136	F. Leander.....	Wood for Baldwin Lake station..	82.50
7137	Brick Larson.....	Wood for Baldwin Lake station..	68.75
7138	S. L. Neal.....	Wood for Baldwin Lake station..	27.50
7139	Wm. Spicer.....	Wood for Baldwin Lake station..	112.43
7140	J. Hughes.....	Wood for Baldwin Lake station..	71.50
7141	J. Grosskopf.....	Wood for Baldwin Lake station..	57.25
7142	F. Hoffman.....	Wood for Baldwin Lake station..	25.00
7143	J. Knusher.....	Wood for Baldwin Lake station..	25.43
7144	H. Rogers.....	Wood for Baldwin Lake station..	68.75
7145	H. A. Gatzaw.....	Wood for Baldwin Lake station..	48.12
7146	For Wright, Barrett & Stilwell, The McGill Printing Co.....	Est. No. 1 and final, annual report	536.70
7147	Duluth Brass Works.....	Brass work.....	1.90
7148	Northwestern Shot & Lead Works	Lead pipe.....	88.65
7149	D. F. DeWolf.....	Oats.....	64.40
7150	Allen & Co.....	Livery.....	3.00
7151	Brown, Treacy & Co.....	Stationery.....	10.85
7152	The N. W. Tel. Ex. Co.....	Rent of telephone and repair private line.....	12.00
7153	J. G. Duggan.....	Repainting buggies, &c.....	40.10
7154	Ios. S. Haack.....	Repairing chairs in office.....	7.50
7155	P. H. Kelly Mercantile Co.....	Oil, &c.....	24.80
7156	The Western Supply Co.....	Lead pipe.....	16.09
7157	Mitsch Wagon & Carriage Co.....	Sharpening tools.....	12.18
7158	H. P. Rugg & Co.....	Pipe fittings, plumbers furnace, &c.....	8.05
7159	Jefferson & Kasson.....	Lumber.....	9.34
7160	Eschelman & Iten.....	Horse shoeing.....	.50
7161	Taylor-Craig Corporation.....	Carpenter work.....	1.75
7162	P. N. Lindquist.....	Horse shoeing.....	4.50
7163	Thos. R. Dufresne.....	Land for right of way.....	175.00
7164	Robinson & Cary Co.....	Pipe fittings.....	5.17
7165	South Park Foundry & Mach. Co.	Ten six inch sleeves.....	14.40
7166	Est. of Jas. Gillilan.....	Rent of storage lot.....	25.00
7167	Northwestern Wheel & F'dry Co...	Machine and blacksmith work....	17.53
7168	Jno. Caulfield, Secretary.....	Cash advanced for postage, &c...	49.50
7169	Pioneer Fuel Co.....	Est. No. 6, fuel.....	83.75
Total.....			\$30,842.61



## LIST OF VOUCHERS—Continued.

APRIL, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7170	John Wagener, city treasurer.....	Pay roll for March, 1895.....	\$3,251.82
7171	Pioneer Fuel Co.....	Est. No. 7 fuel.....	982.93
7172	Robert Seeger.....	Gasoline.....	1.50
7173	Brown, Treacy & Co.....	Stationery.....	5.95
7174	Farwell, Ozman, Kirk & Co.....	Tools.....	10.39
7175	Rich & Clymer.....	Printing and envelopes.....	6.25
7176	A. S. Washburn.....	Electric light, office, two months...	10.00
7177	The Dispatch Printing Co.....	Advertising.....	3.40
7178	Geo. J. Mitsch & Co.....	Supplies.....	14.70
7179	Cornplanter Oil Co.....	Engine oil.....	11.88
7180	Viscosity Oil Co.....	Engine oil.....	28.87
7181	Wedelstaedt & Carmen.....	Job printing.....	3.00
7182	Tierney & Co.....	Feed.....	1.58
7183	H. M. Smyth Printing Co.....	Job printing.....	4.50
7184	The Engineering Co.....	One year's subscription.....	5.00
7185	National Meter Co.....	Meters.....	490.60
7186	Union Water Meter Co.....	Meters.....	300.00
7187	Jefferson & Kasson.....	Lumber.....	10.40
7188	T. L. Blood & Co.....	Paint and oil.....	8.80
7189	Charles Friend & Son.....	Harness fittings and leather.....	3.40
7190	Pioneer Press Co.....	Job printing.....	39.75
7191	D. Ramaley & Son.....	Job printing.....	17.75
7192	Allen & Co.....	Livery.....	17.00
7193	Mitsch Wagon and Car Co.....	Sharpening tools.....	9.50
7194	P. N. Lindquist.....	Horse shoeing.....	2.00
7195	Eshelman & Iten.....	Horse shoeing.....	2.50
7196	Minnesota Engine Works.....	Repairing pumps.....	6.15
7197	Mable & Sutmar.....	Painting buggy, etc.....	11.05
7198	The Call Printing Co.....	Advertising.....	5.00
7199	Daily Globe.....	Advertising.....	4.50
7200	The Dispatch Printing Co.....	Advertising.....	5.50
7201	The Western Supply Co.....	Pipe and fittings.....	5.36
7202	Noyes Bros. & Cutler.....	Lawn grass seed, pump house.....	4.20
7203	Pioneer Press Co.....	Advertising.....	4.50
7204	N. W. Telephone Ex. Co.....	Rent of telephones and repair private line.....	21.00
7205	Kenny Bros.....	Repairing boiler.....	5.00
7206	Estate James Gilfillan.....	Rent of storage lot.....	25.00
7207	N. W. Shot and Lead Works.....	Lead pipe.....	139.67
7208	South Park Foundry and Machine Co.....	Repairing hydrant valves.....	17.25
7209	Union Brass and Metal Mfg. Co.....	Brass work.....	6.01
7210	Robinson & Cary Co.....	Pig tin, pipe and pipe fittings.....	133.02
7211	J. G. Duggan.....	Blacksmithing.....	3.70
7212	John Caulfield, secretary.....	Cash advanced per voucher.....	73.07
7213	J. L. Hertz & Son.....	Tools.....	3.50
7214	John Wagener, city treasurer.....	Interest due May 1, 1895.....	8,750.00
7215	Northern Asphalt and Paving Co.....	Repaving.....	15.13
7216	P. E. Elmund, county treasurer.....	Taxes.....	27.68
7217	The Western Supply Co.....	Est. No. 1 brass goods.....	280.30
Total.....			\$14,790.06

## LIST OF VOUCHERS—Continued.

MAY, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7218	Jno. Wagener, city treasurer.....	Pay roll for April, 1895.....	\$4,040.00
7219	Jno. Wagener, city treasurer.....	Interest due June 1, 1895.....	7,000.00
7220	Hersey Manufacturing Co.....	Meters.....	371.00
7221	Thomson Meter Co.....	Meters.....	89.10
7222	The E. P. Allis Co.....	Valve cages.....	600.00
7223	The N. W. Wheel & Foundry Co.....	Est. No. 1, valve and stop boxes.....	932.60
7224	South Park Foundry & Mach. Co.....	Est. No. 1, specials.....	43.65
7225	South Park Foundry & Mach. Co.....	Est. No. 1, water gates.....	354.00
7226	Martin Feist.....	Lunch.....	3.50
7227	Board of Fire Commissioners.....	Hose.....	40.00
7228	P. N. Lindquist.....	Horseshoeing.....	7.50
7229	Allen & Co.....	Livery.....	14.00
7230	Geo. J. Mitsch & Co.....	Supplies.....	2.80
7231	Dan Cashill.....	Horseshoeing.....	3.50
7232	Franklin Machine Works.....	Machine work.....	2.25
7233	The Dispatch Printing Co.....	Advertising.....	5.10
7234	The N. W. Telephone Ex. Co.....	Rent of telephones.....	6.00
7235	Chas. Friend & Son.....	Harness fittings.....	2.15
7236	D. Ramaley & Son.....	Printing.....	24.00
7237	Jno. Martin Lumber Co.....	Lumber.....	56.43
7238	Jno. G. Duggan.....	Sharpening tools.....	12.85
7239	P. H. Kelly Mer. Co.....	Oil, etc.....	16.40
7240	Cornplanter Oil Co.....	Oil.....	37.40
7241	James Shiley.....	Est. No. 1, drayage.....	188.80
7242	Boeringer & Son.....	Repair revolution counter.....	1.00
7243	Minnesota Engine Works.....	Machine work.....	4.13
7244	Brown, Treacy & Co.....	Stationery, etc.....	40.15
7245	The Crane & Ordway Co.....	Pipe and fittings.....	82.63
7246	Goodyear Rubber Co.....	Rubber boots.....	26.55
7247	T. L. Blood & Co.....	Paint.....	2.78
7248	The Western Supply Co.....	Pipe and fittings.....	63.88
7249	Robinson & Cary Co.....	Pipe, fittings, packing, etc.....	107.98
7250	Farwell, Ozmun, Kirk & Co.....	Tools and hardware.....	22.44
7251	Mitsch Wagon & Carriage Co.....	Sharpening tools.....	5.44
7252	Pioneer Fuel Co.....	Est. No. 8, fuel.....	666.22
7253	The Western Supply Co.....	Est. No. 1, pig lead, lead pipe, etc.....	2,107.54
7254	Est. James Gillilan.....	Rent of storage lot.....	25.00
7255	Mable & Suitmar.....	Sharpening tools.....	15.68
7256	Jno. Caulfield, secretary.....	Cash advanced.....	34.27
7257	St. Paul Plow Co.....	Est. No. 1, special castings.....	302.25
7258	N. W. Cordage Co.....	Fire hydrants.....	26.35
7259	Pioneer Press Co.....	Printing and litho.....	26.00
7260	Union Brass & Metal Mfg. Co.....	Machine work.....	19.60
7261	Robert W. Hunt & Co.....	Est. No. 1, testing pipe.....	184.97
7262	Shickle, Harrison & Howard Iron Co.....	Est. No. 1, iron pipe.....	9,329.67
7263	Howard-Harrison Iron Co.....	Est. No. 1, pipe.....	4,839.40
7264	South Park Foundry & Mach. Co.....	Est. No. 1, hydrants.....	1,054.00
7265	South Park Foundry & Mach. Co.....	Est. No. 2, special loam castings.....	190.61
7266	South Park Foundry & Mach. Co.....	Est. No. 2, gates.....	121.60
7267	The Michigan Brass & Iron Works.....	Drip valves.....	165.00
7268	Henry R. Worthington.....	Meter fittings.....	17.50
7269	D. F. De Wolf.....	Hay.....	69.98
7270	D. L. Bell.....	Cement.....	7.45
7271	A. C. Stocker.....	Insurance.....	33.00
7272	Goodyear Rubber Co.....	Hose.....	1.29
7273	Jno. Caulfield, secretary.....	Cash advanced.....	41.41
7274	Cathcart & Co., agents for A. S. Washburn.....	Electric light.....	10.00
7275	The Western Supply Co.....	Est. No. 2 and final, pig lead, etc.....	1,459.56
7276	Howard-Harrison Iron Co.....	Est. No. 2, 30-inch pipe.....	8,066.86
7277	J. F. George, attorney for A. N. Miller, adm for Marian Miller, dec.	Settlement of case as per voucher.....	1,150.00
	Total.....		\$44,175.22



## LIST OF VOUCHERS--Continued.

JUNE, 1895.

No. of Voucher	NAME	CLAIM.	AMOUNT.
7278	John Wagener, city treasurer.....	Pay roll for May, 1895.....	\$4,427.78
7279	J. G. Duggan.....	Sharpening tools.....	8.60
7280	Chas. Friend & Son.....	Barn Brooms.....	1.00
7281	P. N. Lindquist.....	Horse shoeing.....	7.50
7282	Kavanagh & Johnson.....	Office chairs.....	6.50
7283	Ogden, Merrill & Greer.....	Office duster.....	.52
7284	Pioneer Press Co.....	Printing.....	37.25
7285	John Martin Lumber Co.....	Lumber.....	9.37
7286	D. F. DeWolf.....	Oats.....	74.97
7287	H. Mueller Manfg Co.....	Saddles for pipe tapping.....	2.25
7288	Brown, Treacy & Co.....	Stationery and printing.....	37.75
7289	Dan. Cashill.....	Horse shoeing.....	2.00
7290	D. Ramaley & Son.....	Printing.....	3.00
7291	Farwell, Ozmun, Kirk & Co.....	Tools and hardware.....	11.19
7292	The Dispatch Printing Co.....	Advertising.....	1.36
7293	Goodyear Rubber Co.....	Rubber boots.....	22.50
7294	Tierney & Co.....	Feed.....	1.40
7295	The Western Supply Co.....	Pipe, fittings, etc.....	102.63
7296	Cornplanter Oil Co.....	Gasoline.....	3.15
7297	P. H. Kelly Mercantile Co.....	Candles, etc.....	8.50
7298	Minnesota Engine Works.....	Machine work.....	19.43
7299	Pioneer Fuel Co.....	Estimate No. 9, fuel.....	10.60
7300	Geo. J. Mitsch & Co.....	Supplies.....	13.40
7301	Franklin Machine Works.....	Machine work.....	10.27
7302	St. Paul Stone Co.....	Tiles.....	5.25
7303	Justus Kahlert.....	Machine work.....	1.25
7304	The Crane Ordway Co.....	Copper wire.....	.40
7305	Thos. Fitzpatrick.....	Carpenter work.....	1.50
7306	T. L. Blood & Co.....	Paint.....	3.35
7307	Union Brass & Metal Mfg. Co.....	Machine work.....	8.85
7308	Allen & Co.....	Livery.....	25.00
7309	St. Paul Fire & Marine Ins. Co.....	Insurance.....	18.00
7310	Robinson & Cary Co.....	Machine supplies.....	49.71
7311	Estate of James Gilfillan.....	Rent storage lot.....	25.00
7312	Michigan Brass & Iron Works.....	Automatic drip valves.....	100.00
7313	Mitsch Wagon & Carriage Co.....	Sharpening tools.....	11.61
7314	South Brooklyn Steam Eng. Wks.....	Surface condenser.....	390.00
7315	Robert W. Hunt & Co.....	Estimate No. 2, inspecting pipe.....	252.93
7316	Howard Harrison Iron Co.....	Estimate No. 3, iron pipe.....	10,337.46
7317	John J. L. Houston.....	Repairing air compressor.....	69.80
7318	Mahle & Sutmar.....	Hydrant rods.....	6.25
7319	Fielding & Shepley.....	Repairing paving.....	345.65
7320	Matthew Taylor.....	Hydrant boxes.....	15.00
7321	National Meter Co.....	Meters.....	487.50
7322	Jas. Shiely.....	Estimate No. 2, drayage.....	417.08
7323	P. Doherty.....	Estimate No. 1, pipe laying.....	1,583.37
7324	Million & Young.....	Est. No. 1, div. 2 & 3, pipe laying.....	3,881.74
7325	Jno. Wagener, city treasurer.....	Interest due July 1, 1895.....	5,850.00
7326	South Park Foundry & Mach. Co.....	Estimate No. 2, fire hydrants.....	282.15
7327	South Park Foundry & Mach. Co.....	Estimate No. 3, valves.....	246.40
7328	South Park Foundry & Mach. Co.....	Brass goods, etc.....	46.04
7329	D. L. Bell.....	Cement.....	4.20
7330	N. W. Telephone Exchange Co.....	Rent of telephones.....	6.00
7331	N. W. Wheel & Foundry Co.....	Est. No. 2, valve and stop boxes.....	68.00
7332	St. Paul Plow Co.....	Est. No. 2, special castings.....	433.50
7333	Shickle, Harrison & Howard Iron Co.....	Est. No. 2, iron pipe.....	1,216.00
7334	John Caulfield, Secretary.....	Cash advanced as per voucher.....	213.58
	Total.....		\$81,225.49

## LIST OF VOUCHERS.—Continued.

JULY, 1895.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
7335	Ino. Wagener, City Treasurer.....	Pay roll for June, 1895.....	\$4,943.19
7336	F. A. Ingalls.....	Horse.....	100 00
7337	Union Water Meter Co.....	Meters.....	180 00
7338	Walworth Manufacturing Co.....	Pipe cutter.....	31 50
7339	N. W. Wheel & Foundry Co.....	Boiler grates.....	30 10
7340	Ino. Wagener, City Treasurer.....	Interest due Aug. 1, 1895.....	3,750 00
7341	Ino. Wagener, City Treasurer.....	For sinking fund.....	25,000 00
7342	New England Furniture Co.....	Cushion.....	2 00
7343	The N. W. Telephone Ex. Co.....	Rent of telephones.....	6 00
7344	Brown, Treacy & Co.....	Stationery.....	15 70
7345	Northwestern Shot & Lead Works.....	Lead pipe.....	136 35
7346	J. G. Duggan.....	Sharpening tools.....	13 00
7347	Geo. J. Mitsch & Co.....	Supplies.....	2 40
7348	P. N. Lindquist.....	Horse shoeing.....	8 00
7349	Est. Jas. Gillilan.....	Rent of storage lot.....	25 00
7350	Allen & Co.....	Livery.....	28 50
7351	Robt. W. Hunt & Co.....	Est. No. 3, inspecting pipe.....	91 51
7352	Board Fire Commissioners.....	Hose.....	40 00
7353	D. Ramaley & Son.....	Printing.....	30 00
7354	Martin Feist.....	Lunch.....	3 50
7355	P. H. Kelly Mercantile Co.....	Oil, etc.....	15 78
7356	Chas. Friend & Son.....	Harness fittings.....	2 50
7357	Farwell, Ozmun, Kirk & Co.....	Hardware.....	9 45
7358	Mitsch Wagon & Carriage Co.....	Sharpening tools.....	12 55
7359	James Shiely.....	Est. No. 3, drayage.....	388 22
7360	Union Brass & Metal Mfg. Co.....	Brass fittings.....	6 00
7361	Robinson & Cary Co.....	Fuse, shovels, etc.....	16 56
7362	Babcock Transfer & Storage Co.....	Drayage.....	1 80
7363	The Crane & Ordway Co.....	Iron pipe, valves, etc.....	50 99
7364	D. Cashill.....	Horse shoeing.....	2 00
7365	The Menomone Pressed Brick Co.....	Brick.....	52 80
7366	The Western Supply Co.....	Lead pipe, fittings, etc.....	53 44
7367	P. Doherty.....	Est. No. 2, pipe laying, div. No. 1.....	1,332 00
7368	Million & Young.....	Est. No. 3, pipe laying, div. Nos. 2 and 3.....	1,549 28
7369	St. Paul Plow Co.....	Est. No. 3, special castings.....	356 70
7370	Howard-Harrison Iron Co.....	Est. No. 4 and final, iron pipe.....	6,535 64
7371	N. W. Telephone Ex. Co.....	Labor, private line.....	3 00
7372	Ino. Rogers, Jr. & Bro.....	Insurance.....	33 00
7373	D. L. Bell.....	Fire clay and brick.....	8 90
7374	Justus Kahlert.....	Sharpening lawn mower.....	1 25
7375	Mahle & Sutmar.....	Sharpening tools.....	14 21
7376	Northern Asphalt Paving Co.....	Repairing paving.....	16 67
7377	Ino. Caulfield, Secretary.....	Cash advanced as per voucher.....	58 08
7378	Ino. Caulfield, Secretary.....	Frontage tax refunded.....	33 93
7379	South Park Foundry & Mach. Co.....	Est. No. 4, water gates.....	1,239 80
7380	South Park Foundry & Mach. Co.....	Est. No. 3, loam castings.....	249 41
7381	South Park Foundry & Mach. Co.....	Est. No. 3, fire hydrants.....	313 50
7382	South Park Foundry & Mach. Co.....	Sleeves.....	9 96
7383	St. Paul Foundry Co.....	Sprinkling hydrants, etc.....	62 40
7384	Fielding & Shepley.....	Repair paving.....	131 28
	Total.....		\$46,997.85



## LIST OF VOUCHERS.—Continued.

AUGUST, 1895.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
7385	Jno. Wagener, city treasurer	Pay roll for July, 1895	\$4,325.73
7386	N. W. Shot & Lead Works	Est. No. 1, pig lead	717.18
7387	South Park Foundry & Mach. Co.	Est. No. 4, special castings	343.49
7388	South Park Foundry & Mach. Co.	Est. No. 4, fire hydrants	250.80
7389	South Park Foundry & Mach. Co.	Est. No. 5, valves	336.80
7390	Pioneer Fuel Co.	Est. No. 10, fuel	1,320.15
7391	Anthony P. Smith	Est. No. 1, tapping machine, etc.	667.00
7392	Union Water Meter Co.	Meters	584.00
7393	National Meter Co.	Meters	447.50
7394	A. L. Washburn, Cathcart & Co., agents	Light	15.00
7395	The Pioneer Press Co.	Advertising	6.00
7396	Daily Globe	Advertising	6.00
7397	The Dispatch Printing Co.	Advertising	10.86
7398	P. H. Kelly Mer. Co.	Oil, etc.	90.11
7399	The St. Paul Rubber Co.	Hose and couplings	6.60
7400	Est. of Jas. Gilfillan	Rent of storage lot	25.00
7401	D. Ramaley & Son	Printing	2.00
7402	Jefferson & Kasson	Lumber	8.67
7403	Jno. Dowlan & Son	Rent of engine	3.00
7404	N. W. Telephone Ex. Co.	Rent of telephones	6.00
7405	Chas. Friend & Son	Harness fittings	2.60
7406	P. N. Lindquist	Horseshoeing	6.00
7407	Franklin Machine Works	Machine work	1.50
7408	Nicols & Dean	Tools, etc.	4.14
7409	Minnesota Engine Works	Machine work	3.96
7410	Brown, Treacy & Co.	Stationery	4.68
7411	The Western Supply Co.	Pipe, fittings, etc.	79.97
7412	J. Molitor	Drayage	2.00
7413	Louis Dupree	Drayage	2.00
7414	Mitsch Wagon & Carriage Co.	Sharpening tools	4.74
7415	J. G. Duggan	Sharpening tools, etc.	12.05
7416	F. A. Leyde	Rent of engine	2.50
7417	St. Paul Foundry Co.	Sprinkling hydrants, etc.	100.77
7418	Cornplanter Oil Co.	Gasoline	6.35
7419	Tierney & Co.	Bran	1.19
7420	Farwell, Ozmun, Kirk Co.	Powder, hardware, etc.	15.99
7421	Dan Cashill	Horseshoeing	2.00
7422	Jno. Martin Lumber Co.	Lumber	40.13
7423	The Crane & Ordway Co.	Pipe fittings, etc.	11.62
7424	Theophile Vandiac	Est. No. 1, hauling coal Vадnais L	23.65
7425	Goodyear Rubber Co.	Hose and couplings	78.10
7426	Thos. Fitzpatrick	Carpenter work	4.40
7427	D. L. Bell	Cement	19.60
7428	Geo. J. Mitsch & Co.	Supplies	4.85
7429	Robert W. Hunt & Co.	Est. No. 4, testing pipe	17.17
7430	N. W. Wheel and Foundry Co.	Est. No. 3, valve boxes	70.94
7431	Jno. Wagener, city treasurer	Interest due, Sept. 1, 1895	6,750.00
7432	Robinson & Cary Co.	Supplies	175.00
7433	Eureka Stone Co.	Brick paving	150.00
7434	A. Decker & Co.	Hardware	1.78
7435	St. Paul Plow Co.	Est. No. 4, specials	227.63
7436	George Mitsch	Repairs on walk	8.25
7437	Million & Young	Est. No. 3, pipelaying	1,561.84
7438	Shickle, Harrison & H. Iron Co.	Est. No. 3, iron pipe	1,321.82
7439	Union Brass & Metal Man'g Co.	Corporation cocks, etc.	32.40
7440	Allen & Co.	Livery	35.00
7441	Jno. Wagener, city treasurer	Sinking fund	50,000.00
7442	Patrick Doherty	Est. No. 3, pipe laying	757.06
7443	Jno. Caulfield, secretary	Cash advanced as per voucher	129.42
7444	South Park Foundry & Mach. Co.	Est. No. 5, fire hydrants	282.15
7445	South Park Foundry & Mach. Co.	Est. No. 6, water gates	120.80
7446	Jno. Houle	Rent of portable engine	10.00
7447	Mathew Taylor	Boat	16.50
7448	St. Paul Cartage Co.	Drayage	2.50
7449	C. P. Noves, treas. board of trustees of House of Hope Church.	Hose rebate	42.00
7450	N. W. Telephone Ex Co.	Rent of telephones, etc.	44.50
	Total		\$71,364.14



## LIST OF VOUCHERS—Continued.

SEPTEMBER, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7451	John Wagener, city treasurer.....	Pay roll for August, 1895.....	\$4,587.46
7452	John Wagener, city treasurer.....	Interest due Oct. 1, 1895.....	25,000.00
7453	South Park Foundry and Machine Co.....	Est. No. 7, water gates.....	143.00
7454	The Western Supply Co.....	Est. No. 1 and final, lead pipe.....	713.75
7455	C. W. Peterson.....	Rent of boat.....	19.50
7456	P. W. Luley & Son.....	Tallow.....	2.00
7457	The McGill Printing Co.....	Books.....	8.50
7458	Northwestern Shot and Lead Wks.....	Lead pipe.....	35.38
7459	Jameson, Hevener & Co.....	Oats.....	57.07
7460	Anthony P. Smith.....	Est. No. 2, special castings.....	190.00
7461	Mathew Taylor.....	Forms for testing cement.....	2.25
7462	J. G. Duggan.....	Sharpening Tools.....	2.75
7463	Theo. Vondiac.....	Hauling coal.....	34.73
7464	Allen & Co.....	Livery.....	40.50
7465	Pioneer Press Co.....	Vouchers and bills.....	35.75
7466	Martin Feist.....	Lunch.....	3.50
7467	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	23.58
7468	John Martin Lumber Co.....	Lumber.....	6.05
7469	P. H. Kelly Mercantile Co.....	Oil, brooms, etc.....	44.72
7470	Pioneer Fuel Co.....	Est. No. 11, fuel.....	376.26
7471	D. Ramaley & Son.....	Printing and postals.....	16.50
7472	Brown, Treacy & Co.....	Stationery.....	7.08
7473	Geo. J. Mitsch & Co.....	Supplies.....	3.65
7474	Dispatch Printing Co.....	Advertising.....	5.78
7475	Robert W. Hunt & Co.....	Est. No. 5, testing pipe.....	9.27
7476	P. N. Lindquist.....	Horse shoeing.....	8.00
7477	Dan Cashill.....	Horse shoeing.....	8.00
7478	Estate James Gilfillan.....	Rent of storage lot.....	25.00
7479	N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
7480	D. L. Bell.....	Cement.....	14.90
7481	P. Doherty.....	Est. No. 4, and final, pipe laying, Dale street.....	176.85
7482	Charles Friend & Son.....	Leather, repair harness, etc.....	6.65
7483	J. D. Moran Mfg. and Construction Co.....	Est. No. 1, manholes, etc.....	204.00
7484	J. D. Moran Mfg. and Construction Co.....	Est. No. 1 and final, services on W. 5th.....	452.00
7485	South Park Foundry and Machine Co.....	Est. No. 8, water gates.....	60.80
7486	James Sheely.....	Est. No. 4, drayage.....	98.13
7487	P. H. Thornton.....	Est. No. 1, fencing right-of-way.....	978.44
7488	Million & Young.....	Est. No. 4, div. 2 and 3, pipe laying.....	994.26
7489	Cornplanter Oil Co.....	Gasoline.....	5.40
7490	Schroeder & Dickinson.....	Repairing chair.....	.75
7491	Goodyear Rubber Co.....	Rubber boots.....	17.60
7492	The Western Supply Co.....	Pipe fittings, etc.....	7.08
7493	N. W. Wheel and Foundry Co.....	Stop box covers, etc.....	10.12
7494	Standard Oil Co.....	Oil.....	12.24
7495	St. Paul Gas Light Co.....	Coal.....	46.13
7496	The Crane and Ordway Co.....	Valves, pipe fittings, etc.....	59.33
7497	Union Brass and Metal Mfg. Co.....	Bronze screws and nuts.....	19.80
7498	Robinson & Cary Co.....	Pipe fittings, etc.....	67.29
7499	Farwell, Ozmun, Kirk & Co.....	Powder and hardware.....	21.31
7500	N. W. Shot and Lead Works.....	Lead pipe.....	16.07
7501	St. Paul Foundry Co.....	Manhole covers, etc.....	61.08
7502	J. Strane.....	Hauling coal.....	11.16
7503	Schickie, Harrison & Howard Iron Co.....	Est. No. 4, pipe.....	713.28
7504	F. A. Leyde.....	Rent of engine.....	4.00
7505	Pioneer Fuel Co.....	Est. No. 12, fuel.....	5.35
7506	Portland Stone Co.....	Tiles.....	3.00
7507	National Meter Co.....	Meters.....	405.00
	Total.....		\$35,884.30

## OF THE CITY OF ST. PAUL, FOR 1895.

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## LIST OF VOUCHERS.—Continued.

OCTOBER, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7508	Jno. Wagener, city treasurer.....	Pay roll for September, 1895.....	\$4,636.46
7509	Jno. Wagener, city treasurer.....	Pay roll for September, 1895.....	1,525.50
7510	Jno. Wagener, city treasurer.....	Interest due Nov. 1 and 2, 1895...	8,750.00
7511	Thomson Meter Co.....	Meters.....	101.40
7512	The Michigan Brass & Iron Wks.	Automatic drip valves.....	96.00
7513	N. W. Wheel and Foundry Co.....	Est. No. 3, valves and service boxes.....	240.00
7514	P. W. Luley & Son.....	Tallow.....	2.00
7515	N. W. Engineering Co.....	Fleming brushes.....	3.60
7516	Minnesota Engine Works.....	Machine work.....	15.57
7517	Mahle & Sutmar.....	Hydrant wrenches, etc.....	8.47
7518	H. G. Neal.....	Awnings.....	22.75
7519	N. W. Stamp Works.....	Inspectors' badges.....	2.00
7520	Boggs & Hoyt.....	Hay.....	15.80
7521	T. L. Blood & Co.....	Paint, etc.....	2.95
7522	Viscosity Oil Co.....	Oil.....	27.50
7523	Eureka Stone Co.....	Relaying walks.....	88.60
7524	D. L. Curtice.....	City atlas.....	50.00
7525	Est. Jas. Gillilan.....	Rent of storage lot.....	25.00
7526	J. G. Duggan.....	Sharpening tools, etc.....	4.00
7527	South Park Foundry & Mach. Co	Sleeves, etc.....	56.39
7528	Chas. Friend & Son.....	Saddle pad, etc.....	2.10
7529	Franklin Machine Works.....	Machine work.....	4.40
7530	Warren-Scharf Asphalt Pav. Co...	Repairing paving.....	183.20
7531	Fielding & Shepley.....	Repairing paving.....	73.55
7532	P. H. Kelly Merc. Co.....	Oil, etc.....	28.04
7533	Daily Globe.....	Advertising.....	5.50
7534	Dispatch Printing Co.....	Advertising.....	4.50
7535	Jno. Dowlan & Son.....	Rent of engine.....	6.38
7536	The Western Supply Co.....	Block tin, etc.....	66.79
7537	St. Paul Foundry Co.....	Manholes, covers, etc.....	64.41
7538	Brown, Treacy & Co.....	Stationery.....	5.65
7539	Jefferson & Kasson.....	Lumber.....	7.34
7540	Robinson and Cary Co.....	Pipe fittings, etc.....	13.46
7541	The Crane and Ordway Co.....	Chapman steam trap.....	17.50
7542	Goodyear Rubber Co.....	Hose.....	13.00
7543	The Pioneer Press Co.....	Advertising, bills, etc.....	49.25
7544	Jno. Martin Lumber Co.....	Lumber.....	25.28
7545	Pioneer Fuel Co.....	Est. No. 13 and final fuel.....	397.11
7546	Theophile Vondiac.....	Est. No. 3, hauling coal, Vadnais Lake.....	33.88
7547	Pioneer Fuel Co.....	Est. No. 1, fuel.....	71.98
7548	Geo. J. Mitsch & Co.....	Supplies.....	3.33
7549	Allen & Co.....	Livery.....	33.50
7550	Jno. Rogers, Jr. & Bro.....	Insurance.....	6.00
7551	Farwell, Ozmun, Kirk & Co.....	Hardware.....	1.46
7552	N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
7553	Tierney & Co.....	Feed.....	.92
7554	Minnesota Engine Works.....	Machine work.....	1.00
7555	Mitsch Wagon and Carriage Co...	Sharpening tools.....	6.35
7556	St. Paul Stone Co.....	Hexagon tile.....	9.60
7557	Ransom Subway Co.....	Est. No. 1, conduit, etc., to Otter Lake.....	1,360.00
7558	J. D. Moran Mfg. and Const. Co.	Est. No. 2, tunnel and shaft hole..	385.90
7559	P. H. Thornton.....	Est. No. 2 and final, fencing right-of-way.....	747.69
7560	Mahle & Sutmar.....	Sharpening tools, etc.....	5.92
7561	Cornplanter Oil Co.....	Gasoline.....	1.95
7562	Dan Cashill.....	Horse shoeing.....	2.50
7563	H. M. Smyth Printing Co.....	Order books.....	4.50
7564	N. W. Wheel and Foundry Co.....	Est. No. 4, valve and service boxes	120.00
7565	Million & Young.....	Est. No. 5, pipe laying, divs. 2 and 3.....	315.20
7566	St. Paul Plow Co.....	Est. No. 1, specials for well plant, Vadnais Lake.....	768.40

## LIST OF VOUCHERS—Continued.

## OCTOBER—Continued.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7567	St. Paul Plow Co.....	Est. No. 5, specials.....	\$18.68
7568	Jno. Caulfield, secretary.....	Cash advanced per voucher.....	50.40
7569	St. Paul Plow Co.....	Est. No. 2 and final, specialsVad. L.	131.30
7570	The Menomonic Pressed Brick Co.	Brick.....	56.10
7571	South Park Foundry & Mach. Co.	Gates for intake chamber, Otter Lake.....	86 00
7572	South Park Foundry & Mach. Co.	Repairing hydrant, valves, etc.....	27.60
7573	Shickle, Harrison & Howard Iron Co.....	Est. No. 5 and final, iron pipe.....	1,181.49
7574	Wedelstaedt & Carman.....	Printing 500 postals.....	1.50
7575	Johnson Bros. & Loomis.....	Desk and repairing old desks.....	50.00
7576	Jameson, Hevener & Co.....	Hay.....	16.61
7577	P. N. Lindquist.....	Horse shoeing.....	8.00
7578	James Shiely.....	Est. No. 5 and final, drayage.....	218.22
7579	Warren-Scharf Asphalt Pav. Co..	Repairing paving.....	7.14
7580	Thomson Meter Co.....	Meter gears, etc.....	13.35
7581	Roberts-Goss Co.....	Machine work.....	22.01
7582	J. J. McCafferty, atty for Arthur Foussard.....	Injuries.....	300.00
7583	St. Paul Printing Co.....	Printing affidavits, etc.....	9.50
	Total.....		\$22,453.68

## LIST OF VOUCHERS--Continued.

NOVEMBER, 1895.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7584	John Wagener, city treasurer.....	Pay roll for October, 1895.....	\$4,749.55
7585	Robt. W. Hunt & Co.....	Est. No. 6 and final, testing pipe	15.23
7586	Penton Metal Manfg Co.....	Omnibus.....	141.50
7587	Anthony P. Smith.....	Est. No. 3, branches and valves..	103.00
7588	South Park Foundry & Mach. Co.....	Est. No. 9, valves.....	70.80
7589	South Park Foundry & Mach. Co.....	Hydrant caps and stuffing boxes	22.20
7590	Fielding & Shepley.....	Re-paving.....	178.04
7591	S. P. Spates & Co.....	Cement.....	192.00
7592	Jno. Caulfield, secretary.....	Cash advanced.....	35.63
7593	F. E. Elmund, county treasurer.....	Frontage tax refunded.....	73.82
7594	P. N. Lindquist.....	Horseshoeing.....	8.00
7595	Peter Erickson.....	Gravel, sand, etc.....	46.00
7596	Ransome Subway Co.....	Lumber.....	2.00
7597	Ransome Subway Co., for National Ger-Amer. Bank.....	Est. No. 2, conduit Otter Lake... Est. No. 1, well plant, etc., Vad-nais Lake.....	2,465.00 2,295.00
7598	Chas. Stone.....	Oats.....	38.59
7599	Griggs Bros.....	Rent of telephones.....	8.50
7600	N. W. Telephone Ex. Co.....	Election supplies.....	1.81
7601	N. W. Engineering Co.....	Hardware, etc.....	60.95
7602	Farwell, Ozmun, Kirk & Co.....	Oil, etc.....	39.95
7603	P. H. Kelly Mer. Co.....	Rubber boots.....	11.49
7604	Goodyear Rubber Co.....	Gasoline.....	1.95
7605	Cornplanter Oil Co.....	Blanket, etc.....	3.35
7606	Chas. Friend & Son.....	Sharpening tools, etc.....	12.00
7607	J. G. Duggan.....	Rent of storage lot.....	25.00
7608	Est. Jas. Gillfillan.....	Stop cocks, etc.....	43.80
7609	Union Brass & Metal Mfg Co.....	Cement and lime.....	21.65
7610	D. L. Bell.....	Repairing chair.....	1.00
7611	Schroeder & Dickinson.....	Sharpening tools.....	12.44
7612	Mitsch Wagon & Carriage Co.....	2000 turn-on slips.....	1.75
7613	Wedelstaedt & Carman.....	Lead pipe.....	15.43
7614	N. W. Shot and Lead Works.....	Blankets.....	12.25
7615	Lindeke, Warner & Schurmeier.....	Washers.....	4.43
7616	Nicols & Dean.....	Stationery.....	2.00
7617	H. E. Wedelstaedt.....	Glazing.....	3.25
7618	Bazille & Partridge.....	Galvanized pipe, etc.....	43.88
7619	The Western Supply Co.....	Livery.....	64.50
7620	Allen & Co.....	Rent of boat.....	11.25
7621	C. W. Peterson.....	Ice, May 31 to Oct. 15, 1895.....	9.00
7622	People's Ice Co.....	Stationery, etc.....	31.40
7623	Brown, Treacy & Co.....	Machine work.....	2.75
7624	Franklin Machine Works.....	Pipe fittings, etc.....	32.94
7625	Robinson & Cary Co.....	Lantern globes, etc.....	.78
7626	Ogden, Merrill & Greer.....	Sleeves.....	34.30
7627	South Park Foundry and Mach. Co.....	Drayage.....	1.00
7628	John Miller.....	Lumber.....	33.60
7629	John Martin Lumber Co.....	Est. No. 1, lumber.....	257.15
7630	John Martin Lumber Co.....	Est. No. 3 and final, open canal, etc	225.00
7631	P. H. Thornton.....	Changing H. S. bills.....	8.50
7632	Pioneer Press Co.....	Hex. tile.....	7.20
7633	St. Paul Stone Co.....	Cert. copy of plat.....	5.00
7634	C. E. Green, register of deeds, Anoka County.....	Plastering.....	57.12
7635	James Cullen.....	Supplies.....	18.92
7636	Geo. J. Mitsch & Co.....	Pipe and fittings.....	18.45
7637	The Crane and Ordway Co.....	Est. No. 2, fuel.....	1,217.23
7638	Pioneer Fuel Co.....	Meters.....	202.50
7639	National Meter Co.....	Paint.....	1.40
7640	T. L. Blood & Co.....	Horseshoeing.....	4.00
7641	Dan Cashill.....	Keys and repairing vault door..	6.15
7642	Wm. B. Hale & Co.....		

## LIST OF VOUCHERS—Continued.

NOVEMBER, 1795—Continued.

No. of Voucher	NAME.	CLAIM.	AMOUNT.
7643	Million & Young.....	Est. No. 6, pipe laying.....	\$514.20
7644	J. D. Moran Mfg. and Con. Co.....	Est. No. 3 and final.....	381.50
7645	Hiersey Manfg. Co.....	Meter fittings.....	166.60
7646	Wedelstaedt & Carmen.....	Envelopes.....	3.00
7647	Pioneer Fuel Co.....	Est. No. 3, fuel.....	82.15
7648	Theophile Vondiac.....	Est. No. 4, hauling coal Vad. L.	9.60
7649	John Caulfield, secretary.....	Cash advanced.....	17.58
7650	Mahle & Sutmar.....	Repairing buggy, etc.....	1.65
7651	Hennessy & Cox.....	Repairing paving, etc.....	156.60
7652	E. P. Allis & Co.....	Est. No. 1, engine for well plant at Vadnais Lake.....	3,750.00
	Total.....		\$18,092.26
	Grand Total.....		\$362,666.11



# SUPERINTENDENT'S REPORT.

ST. PAUL, December 1, 1895.

To the Hon. President and Members of the Board of Water Commissioners:—

GENTLEMEN:—I have the honor to transmit herewith my fourteenth annual report, showing the work done during the past year, and the present condition of the works.

The following statement shows the extensions made this season.

## LOW SERVICE.

	Feet.
Six (6) inch pipe.....	1,575
Twelve (12) inch pipe.....	843
A total on low service of.....	2,418

## HIGH SERVICE.

	Feet.
Four (4) inch pipe.....	920
Six (6) inch pipe.....	17,732
Twelve (12) inch pipe.....	709
Twenty-four (24) inch pipe.....	18
Thirty (30) inch pipe.....	9,234
A total on high service of.....	28,613
Or five miles, 2,213 feet.	

## WEST SIDE HIGH SERVICE.

	Feet.
Six (6) inch pipe.....	1,456
A total on West Side High Service.....	1,456

Totals of mains laid this year, 6 miles, 807 feet, making a grand total of supply and distribution mains to date of 233 miles, 3,804 feet.

In addition to above there were 10,163 feet or 1 mile, 4,883 feet of mains relaid on low service and 24 feet relaid on high service this year, 259 feet transferred from low to high service.

## REPAIRS OF MAINS.

There have been ten leaks and breaks in mains the past year, one caused by settling of sewer trench, five leaks in joints, one caused by frost, two caused by sand holes in casting, and one caused by plug being blown out.

On account of paving next year it will be necessary to relay mains on the following streets: Four inch pipe on Sixth street, from Wacouta to east line of Broadway; to relay with eight inch pipe the old six inch cement pipe on Broadway from Ninth to Grove; and the four inch pipe on Eighth from Kittson to Wabasha to be relaid with eight inch pipe.

The grading of Rice street across the force main west of McCarron Lake pumping station has imperiled the safety of the high service supply main and is likely to be the cause of more trouble next spring when the contractor resumes the grading.

## FIRE HYDRANTS.

Our fire hydrants are at present in excellent condition. Sixty-nine additional fire hydrants have been placed this year, making a total of 2200 now in use. The repairs on same for the past year were as follows:

## REPAIRS OF HYDRANTS.

There have been forty-seven leaks and breaks in fire hydrants, of which one was caused by a broken rod, one by broken ring valve, one by broken ring valve key in rod, twenty valves cut by stones, twelve loose valve nuts, two loose ring valve nuts, two caused by defective seat washers, one by runaway team, and seven had to be taken out to repair waste vent.

## VALVES AND VALVE REPAIRS.

There were sixty-eight new valves placed this year, making a total of 1954 now in use.

There have been seventy-one leaks in stuffing boxes, three loose glands in stuffing boxes, seventeen defective spindles, two leaky flange joints, eighteen by rust in gland of stuffing boxes, one broken spreader, four by rust in pinion wheel, and one by iron spreader in disk.

## SPRINKLING STAND PIPES.

There have been twenty-one new sprinkling stand pipes placed this year, making a total in all of 278.

There have been thirty-nine leaks and breaks in same, as follows: Twenty-one caused by leak in rod valves, and eighteen pipes opened by frost.

## SERVICE PIPES.

Seven hundred and one service pipes were put in this year, making a total of 14,242.

The leaks in service pipes have been as follows: Twenty-six leaks and breaks in service pipes and stops, five have been caused by broken or defective joints; sixteen by broken or defective stops; two by defective pipe; one by defective goose neck, and two in temporary mains.

Sixty-six old stops without checks were taken out and replaced with new stops. All stops taken out were rivet bottoms.

One hundred and seventy-two service pipes were reported frozen this year, at the office, out of a total of 14,242, of which one hundred and sixteen were frozen inside of property line or at sink, two frozen in area ways, and fifty-four frozen in street outside of property line.

Respectfully submitted,

J. B. OVERTON,  
Superintendent.



## PIPE LAID ON LOW SERVICE DURING THE YEAR 1895.

DATE.	STREET.	FROM STREET TO STREET.	6 Inch.	12 Inch.
Dec. 24, 1894..	Washington	Sixth to Seventh		204
Jan. 21, 1895..	West Fifth	East of Seventh	128	
Jan. 26, 1895..	Exchange	Fourth to Seventh	258	
June 14, 1895..	Daly	Crossing Jefferson	64	
June 14, 1895..	Jefferson	Daly to Arbor		689
June 14, 1895..	Arbor	Jefferson to Grace	595	
June 20, 1895..	Fifth	East of Third	104	
June 29, 1895..	Plato	West of S. Robert main	18	
July 6, 1895..	Ninth	Crossing St. Peter	42	
Aug. 6, 1895..	Exchange	Crossing Wabasha	44	
Sept. 9, 1895..	Wakouta	South of Third	118	
Sept. 12, 1895..	Rosabel	Third and south of same	161	
Sept. 17, 1895..	Winnifred	W. of Bellows to W. L. of L. 15, B. 200	48	
Total.....			1575	843
Total 6-inch pipe.....			1575	
Total 12-inch pipe.....				843
Total.....			2418 feet.	

## PIPE LAID ON HIGH SERVICE DURING THE YEAR 1895.

DATE.	STREET.	FROM STREET TO STREET.	4 In.	6 In.	12 In.	24 In.	30 In.
May 11	Lawson	Forest to Earl		1,334			
May 14	Cook	Mendota to Forrest		657			
May 16	Atlantic	Seventh to Stillwater		1,138			
May 18	Fairmount	Victoria to Milton		611			
May 20	E. Fourth	Earl to Terry		676			
May 23	Pacific	Cypress to Hester		1,260			
May 25	Hague	Lexington to Griggs		1,331			
May 28	Simpson	Blair to Minnehaha		641			
May 29	Ellis	Raymond to Seal		377			
June 7	Summit	Snelling to Macalester			656		
June 7	Macalester	Crossing Summit		140			
June 7	Macalester	Grand to Princeton		1,340			
June 7	Princeton	Macalester to Baldwin		1,399			
June 7	Cambridge	Princeton to Lincoln		1,060			
June 7	Lincoln	Baldwin to Macalester		1,167			
June 19	W. Third	At College		36			
July 18	Blair	Frey to Fairview		1,968			
July 18	Frey	At Blair		6			
July 27	Dale	S. S. C of Front to foot of Reservoir					9,234
July 30	Minnehaha	At Dale			18		
July 30	Lake Como and Phalen ave	At Dale			23		
July 30	Maryland	At Dale			12		
July 30	Dale	Connection bet. 24 and 30 in. line				18	
Aug. 3	Pennsylvania	22 ft. w. of Park to Rice	505				
Aug. 19	Jenks	Cortland to N. P. yard		875			
Sept. 5	Hampden	At Hersey		45			
Sept. 23	Fairview	Mt. Airy to n. line of l. 13 b. 13		233			
Sept. 27	Dayton	Griggs to w. line of l. 27 b. 3		160			
Oct. 19	Grand	Macalester to Baldwin		1,163			
Oct. 28	Long	Crossing of Bradford		115			
Nov. 4	Avon	Marshall to Dayton	415				
Total			920	17,732	709	18	9,234

Total 4-inch pipe..... 920

Total 6-inch pipe..... 17,732

Total 12-inch pipe..... 709

Total 24-inch pipe..... 18

Total 30-inch pipe..... 9,234

28,613 feet, or 5 miles, 2,213 feet.

## PIPE LAID ON WEST SIDE HIGH SERVICE DURING THE YEAR 1895.

DATE.	STREET.	FROM STREET TO STREET.	6 Inch.
October 25.	Curtis.....	Oakdale to 250 feet E. of Woodbury.....	1,437
October 25.	Oakdale.....	At Curtis.....	19
Total.....			1,456

Total 6 inch pipe.....1,456 feet.

Total mileage laid this year on High and Low service and High Service West St. Paul, 6 miles and 807 feet.

## LOCATION, SIZE AND NUMBER OF FEET OF PIPE RELAIID ON LOW SERVICE DURING THE YEAR 1895.

DATE.	STREET.	FROM STREET TO STREET.	6 In.	8 In.	12 In.	16 In.	20 In.
Jan. 17....	Washington....	Third to Sixth, 955 ft of 4 inch relaid with.....			955		
May 16....	Wakouta.....	3d to 8th, 294 ft of 4 in. and 1312 ft. of 6 in. relaid with.....			1606		
June 15....	East Sixth.....	Wakouta to Wabasha, 4 inch relaid with.....		2287			
June 2....	Third.....	Fort to Smith, old cement relaid with iron.....	348				
July 22....	St. Peter.....	Seventh to College, old cement relaid with iron.....	1298				
Aug. 13....	Wabasha.....	Ninth to College, old cement relaid with iron.....	980				
Sept. 10....	Fifth.....	Broadway to 23 E. Fifth, 4 inch relaid with.....			2689		
		Total.....	2626	2287	5250		

10,163 feet, or 1 mile, 4883 feet.

## TRANSFERRED FROM LOW TO HIGH SERVICE.

DATE.	STREET.	FROM STREET TO STREET.	4 In.	6 In.	8 In.	12 In.	16 In.
July 19....	West Third.....	Pleasant to College, low to high service.....		259			
		Total.....		259			

## LOCATION, SIZE AND NUMBER OF FEET OF PIPE RELAIID ON HIGH SERVICE DURING THE YEAR 1895.

DATE.	STREET.	FROM STREET TO STREET.	16 In.	20 In.
July 27....	Front.....	At Dale, 12 ft of 12 inch relaid with.....	12	
July 30....	Front.....	At Dale, 12 ft of 12 inch relaid with 12.....		12
		Total.....	12	12

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON LOW  
SERVICE TO DECEMBER 1st, 1895.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Alabama...	Crossing State.....		55						
Armstrong	Drake to Chatsworth.....		3865						
Arbor.....	Jefferson to Grace.....		595						
Audubon...	Seventh to Drake.....		745						
Ada.....	Robie to Winnifred.....	334							
Banfil.....	Smith Avenue to Duke.....	2280	667						
Bay.....	Stewart to Randolph.....		1944						
Beaumont.	DeSoto to Payne.....		1821						
Beck's Pl'ce	Lafayette to DeSoto.....		481						
Bedford.....	North to Minnehaha.....		1327						
Belvidere...	Andrew to Concord.....		1647						
Bradley.....	100 feet south of Grove to Minnehaha.....	498	1503						
Broadway.	Mississippi River to Uni- versity.....	498	1735		1938		741		
Bruno.....	East of Lafayette.....		47						
Burr.....	Partridge to Fauquier.....		2473						
Bancroft....	Concord to Congress.....		935						
Bidwell.....	Isabel to Congress.....		302						
Canada.....	Ninth to University.....		2055						
Cedar.....	Third to Summit.....		289	2573		614			
Chestnut....	Seventh to Washington..		1235						
Colborne...	Jefferson to Superior.....		1763						
College.....	Cedar to Smith Avenue..		1670						
Collins.....	Lafayette to Bedford.....		1016						
Cross Miss.									
issippi Riv.	Broadway to State.....				1089				
Concord....	Isabel to Belvidere.....		6860						
Congress....	350 feet east of Bancroft to Charlton.....	392	6425						
Chicago.....	Wabasha to S. Robert.....		741						
Colorado....	R. R. to Parnell.....		1240						
Clinton.....	Congress to Winnifred.....		403						
Columbia....	Glencoe to Pennsylvania		745						
Decatur.....	Bedford to Beaumont.....		710						
DeSoto.....	Hopkins to Fauquier.....		453	1540					
Douglas.....	Seventh to Ramsey.....		1144						
Duke.....	Von Minden to Goodhue..		1057						
Dousman....	Greenwood to Bellows.....		576						
Delos.....	James to Jefferson.....		2911						
Daly.....	Robert to Gorman.....		1050						
Dearborn...	Spring to Seventh.....		705						
Eagle.....	Wabasha to 110 feet east of Neill.....	4691							
Eleventh....	Cedar to Broadway.....		1238						
Elm.....	Exchange to C. M. & St. P. R. R.....	406							
Exchange....	Wabasha to Wilkin.....	3962	323						
Baton.....	At Indiana and Fairfield crossing.....		51		100				
Edgerton....	Minnehaha to Reaney.....		328						
Erie.....	St. Clair to Cascade.....		1807						
Emma.....	Western Short Line.....	373							
Fairfield....	State to Wabasha.....		2812						
Fauquier....	Payne to DeSoto.....			1982					
Fifth.....	Third to Kittson.....	2213	2614	2689					
Fort.....	Seventh to Tenth.....				1616				
Fourth.....	Exchange to 762 ft. E. of Kittson.....		4865	2679					
Fourteenth	Broadway to Robert.....		1368						
Franklin....	Elm to Ninth.....	3308							
Pillmore....	Wabasha to State.....		2808						



## WATER MAINS ON LOW SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Fred	300 ft. E. of Burr.....	337							
Garfield	Ramsey to Goodrich.....		1002						
Goodhue	Cliff to Duke.....		2817						
Goodrich	Mil. Short Line to Richmond.....		1260	1763					
Grace	Seventh to Colborne.....		72						
Grove	Monroe to Jackson.....	133	1310			1544			
Glencoe	Mississippi to Columbia.....		592						
George	State to Stryker.....			2625					
Goff	Wabasha to Winnifred.....		105						
Greenwood	Winnifred to Congress.....		305						
Harrison	Douglas to Lawton.....		1971						
Hopkins	DeSoto to Bradley.....		700						
Hall	George to Prospect Ter.....		2080						
Indiana	State to Ethel.....			2462	2242				
Isabel	State to Charlton.....			5055					
Jackson	Levee to University.....	40	1223	3179		108			
Jefferson	Erie to Arbor.....		63	1171					
Jones	Seventh to Warsaw.....		425						
Kassie	Minnehaha to Fauquier.....		634						
John	Third to Williams.....	895	2443						
Juno	View to Chatsworth.....		2130						
Kittson	Fourth to Seventh.....		846						
Kentucky	Crossing State.....		55						
Lafayette	Grove to DeSoto.....			150	1915				
Lex ave.	Seventh to Drake.....		1445						
Lech	Goodrich to Ramsey.....		1146						
Levee	Sibley to Jackson.....	340							
Locust	Seventh to Grove.....				777	248			
L'Orient	Thirtieth to Minnehaha.....		2409						
Livingston	Delos to Wood.....		580						
Lisbon	Douglas to Pleasant.....		973						
Logan	Bay to Canton.....		814						
Louisa	Robert to Gorman.....		701						
McBoal	Wilkin to Douglas.....		1301						
Magnolia	Crossing Mississippi.....		18						
Market	Third to Fourth.....	250							
Minnehaha	Payne to Rivoli.....		1707						
Minnesota	Third to Twelfth.....	1484	1428						
Mississippi	Grove to Overton Ave.....		5165					8013	
Monroe Pl.	Grove to Woodward.....	300							
Mt. Airy	Mississippi to L'Orient.....		330						
Michigan	Crossing Seventh.....		59						
Mayall's	Seventh to Ninth.....	410							
Midway	Oakdale to Brown.....		1847						
Nash	Pine to L'Orient.....		698						
Neill	Seventh to Eighth.....	325							
Ninth	Neill to Smith Avenue.....	975	5187						
Norris	Canada to Temperance.....	761							
North	Bedford to DeSoto.....		851						
Nugent	St. Clair to C. M. & St. P. Short Line.....		513						
Oliver	Sixth to Olmsted.....	236	1248						
Olmsted	John to Pine.....		651						
Oncida	South of Seventh.....		36						
Oakdale	State to Midway.....		326		350				
Overton Av	Mississippi to terminal chamber.....							8423	18
Partridge	Bradley to DeSoto.....	472							
Pine	Seventh to Olmsted.....	1275	965						
Plato	West of South Robert.....		18						
Pleasant	Sixth to Goodrich.....		4884						
Prince	John to Broadway.....		825						
Payne	Beaumont to Omaha Ry.....		1092						
Pennsylvania	Mississippi to Columbia.....		661						
Preble	Beaumont to Minnehaha.....		471						
Prescott	Oakdale to Woodbury.....		1353						
Ramsey	Seventh to Pleasant.....		1352		307				
Randolph	Webster to Milton.....		757	2818					
Richmond	Seventh and Goodrich.....		90						

## WATER MAINS ON LOW SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Robert .....	Elizabeth to Central .....		8881							
Reaney .....	St. Paul & Duluth R.R. to Edgerton .....		905							
Rosabel .....	U. Depot Grounds to Seventh .....		1598							
Robie .....	State to Andrew .....		2341							
St. Clair .....	Cliff to Colborne .....		985		112					
St. Peter .....	Third to College .....		2866							
Seventh .....	Duluth Railroad to Tuscarora .....	350	1000		470	15656	1508			
Second .....	East of Robert .....		18							
Sherman .....	Bluff to Pleasant .....		1937							
Sibley .....	Levee to Norris .....	1638	1450							
Sixth .....	Kittson to Pleasant .....	2649	2044	2287						
Smith St. ....	Wilkin to Douglas .....		1074							
Smith Ave. ....	College to McBoat .....		3924							
Somerset .....	John to Pine .....		669							
Spruce .....	Sibley to Wacouta .....	393								
State .....	Miss. River to W. S. pump house .....					7704				
Summit Av .....	Robert to Cedar .....		859							
Stryker .....	George to Prospect Terrace .....		2106							
Stewart .....	Tuscarora to Bay .....		909							
Temp'ance .....	Eighth to Thirteenth .....	1569								
Tenth .....	Locust to College .....	1765	2123				1390			
Third .....	Pleasant to W. end of 3d St. bridge .....		847		6648					
Thirteenth .....	Pine to Jackson .....		2075							
Thompson .....	Ramsey to Pleasant .....		545							
Twelfth .....	Pine to Cedar .....	290					1274			
Toronto .....	Seventh to Jefferson .....		692							
Tennessee .....	Crossing State .....		51							
Tuscarora .....	Stewart to Milton .....		2624							
Van Slyke .....	Broadway to Olive .....	557								
Von Minden .....	Dousman to Western .....		897							
View .....	Seventh to Palace .....		2081							
Yacouta .....	Union D. Grounds to Spruce .....	783	118		1736					
Walnut .....	100 feet S. of I. P. to Pleasant .....	2420								
Warsaw .....	Audubon to Palace .....		1030							
Washing'n. ....	Chestnut to Sevth .....	1047			1236					
Waverly Pl .....	Lafayette to John .....		411							
Webster .....	Clay to Seventh .....		316							
Western Av .....	Mil. Ry to Pleasant .....		2350							
Westmins'r .....	Waverly Place to N. P. Ry .....		1022							
Willias .....	Fifth to Seventh .....	550								
Wilkin .....	Mil. Ry to Sherman .....		1215							
Winnifred .....	Andrew to 100 ft. W. of Bellows .....		5540							
Woodward .....	Bradley to John .....	683								
Wabasha .....	Goff to Summit .....		6965							
Watson .....	View to Chatsworth .....		2133							

## WATER MAINS ON LOW SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Winslow.....	Isabel to Prospect Terrace.....		745							
Yankee.....	Seventh to Dousman.....	678								
Main old line.....	Fauquier to Lake Phalen.....					6000		7024		
	Total.....	42560	195305	2287	47748	38078	8302	8765	16436	18

	Feet.
Total 4-inch pipe.....	42,560
Total 6-inch pipe.....	195,305
Total 8-inch pipe.....	2,287
Total 12-inch pipe.....	47,748
Total 16-inch pipe.....	38,078
Total 20-inch pipe.....	8,302
Total 24-inch pipe.....	8,765
Total 30-inch pipe.....	16,436
Total 36-inch pipe.....	18

Total.....359,499 feet, or 68 miles, 459 feet.



LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
HIGH SERVICE TO DECEMBER 1, 1895.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Arlington	Greenbrier to Payne	650							
Arundel	Summit to Lafond	2553							
Ashland	Western to Oxford		7203						
Aurora	Robert to Chatsworth		7414						
Arcade	Third to Rose		1070	5342					
Astoria	St. Anth'y to Milwaukee		275						
Argyle	Front to Van Slyke	370	831						
Albemarle	Atwater to Front	1293							
Arch	100 feet W. of Columbia to Jackson		1725						
Atlantic	Fauquier to Stillwater		1785						
Atwater	Rice to Sylvan		1142						
Agate	Cortland to York		1739						
Avon	Dayton to Martin	1341							
Bates	Murray to Hastings		376	3035					
Beech	Seventh to Duluth		3738						
Blair	Western to Fairview		4610						
Broadway	Thirteenth to Mt. Airy		407		533				
Brewster	University to Como		1076						
Burr	C. St. P., M. & O. R. R. to Brainard		3498						
Bradford	Hampden to Endicott		819						
Bradley	Maryland to 236 feet of		256						
Burgess	At Dale and at Como		114						
Bayless av.	Raymond to Langford P.				2935				
Bayless Pl.	Raymond to Bayless av.	902							
Burns	Mound to Griffith		2753						
Blake	Raymond to Langford P.								
Beacon	University to Shields	594	282		186				
Buffalo	Capitol to Genesee		631						
Canada	University to Valley		290						
Capitol	Mississippi to Fairview		6866						
Carroll	Rice to Cleveland		13202						
Conway	Cypress to Maria		3067						
Cedar	Summit to Como		2486						
Central av.	E. line of Central Park to Rice	557	1254						
Cent'l P. D.	Summit to Central av.	1209							
E. & W.	Rice to Prior		10171						
Charles	Front to Van Slyke	1103	1283						
Churchill	Rice to Third		1165						
College	E. line of lot 4, block 5 to N. line of lot 5, block 1.								
Como Boul	Warrendale		666						
Como av.	Park to Dale				469	6555			
Chelton	Prior to Tatum		559						
Cherry	267 feet W. of Hoffman to Maria	267	565						
Cook	Forrest to Rice		6123						
Case	Forrest to Terrace		345	6551					
Claghorn	Lafond to Van Buren		628						
Cypress	North of Euclid	45							
Cromwell	Manvel to Cudworth		1599						
Cudworth	Bayless to Bustis		985						
Clark	Whitall to Case		1308						
Cross	Argyle to Lexington		966						
Cambridge	Princeton to Lincoln		1060						
County Rd.	Langford to Dooley				256				
Crocus Pl.	Goodrich to Fairmount	1314							
Chatsw'gh	Evergreen to Van Slyke		983						
Cleveland	Lincoln to University			3411	3313				
Cortland	Capitol to Maryland		252		4000				
Cayuga	Mississippi to Cortland		1630						
Carter	W. line L. 31, B. 40, to County road		1886						
Dale	Fairmount to Reservoir	4800		2110	5280	1453	14500	9234	1560
Dayton	Summit to Cleveland		11578	4675					

## WATER MAINS, HIGH SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Duluth.....	Seventh to Omaha Ry.....		434						
Dayton Pl.	West of Maria.....	275							
Desoto.....	Mt. Ida to Lawson.....		3510						
Dawson.....	ArCADE to Gotzian.....		2958						
Dooley.....	County Road to 15 ft. E. of Raymond.....		1327						
Earl.....	Burns to Cook.....			3593	2291				
Edmund.....	Rice to Milton.....		8518						
Elchenw'ld	Sixth to Seventh.....		532						
Kuclid.....	Maple to Earl.....		2391						
Ellet.....	Charles to Blair.....	1034							
Edgerton.....	York to Maryland.....			4272					
Everett Ct.	Wheeler to Gt. Northern Ry.....		355						
Evergreen.....	Victoria to Lexington.....		1876						
Ellis.....	Raymond to Seal.....		377						
Farrington	Summit to Lafond.....		3459						
Pauquier.....	290 feet E. of Atlantic to Greenbrier.....		6153						
Puller.....	Rice to 200 ft. W. of Oxford.....		8092						
Fifth.....	125 ft. E. of Hoffman to Maple.....		1543						
Floral.....	Grand to Summit.....	480							
Pourth.....	Terry to 400 feet W. of Maria.....		5342						
Francis.....	ArCADE to Cypress.....		1264						
Front.....	Sylvan to Lexington.....		1140	10475	12	12			
Forrest.....	Conway to Geranium.....		3113						
Fairmount	Dale to Milton.....		2931	518					
Fairview st	Valley to 200 feet N. of Mt. Airy.....		878						
Peronia.....	Fairview to Prior.....		1378						
Freemont.....	Earl to ArCADE.....		2577						
Fairw'wav.	Selby to Capitol.....			2542	1971				
Fry.....	Territorial Road to Capitol.....	1087	6						
Force Main	Pump house to Reservoir.....					7840	70		
Flandrau.....	Harvester to Stillwater.....		595						
Grand.....	Lawton to Cretin.....		8094						
Grove.....	Seventh to Pine.....			2618					
Grotto.....	Lincoln to Lafond.....		4594						
Goodrich.....	782 feet E. of Dale to Oxford.....		5358						
Greenbrier.....	Seventh to Magnolia.....	512		650					
Gaultier.....	Sherburne to Cook.....		2730						
Gordon.....	Raymond to Carter.....		1387	693					
Geranium.....	ArCADE to Edgerton.....		1303						
Genesee.....	Mississippi to Buffalo.....		814						
Granite.....	Mississippi to Courtland.....		1622						
Hoffman.....	Clermont to Seventh.....		2946						
Holly.....	Western to Victoria.....		5287						
Hague.....	Dale to Griggs.....		6512						
Hudson.....	Cypress to Maria.....		2389	194					
Hastings.....	Bates to Hester.....			3066					
Hewitt.....	Aldine to Syndicate.....		4541						
Hope.....	Fourth to Seventh.....		1156						
Hampden.....	Raymond to Hersey.....		1691						
Harvester.....	White Bear to Hazel.....			1306					
Hazel.....	Harvester to 300 feet N. of Ames.....			980					
Horton.....	Van Slye to Como Boulevard.....		419						
Hardenburg Pl.	Lytton Place to Atwater.....	349							
Iglehart.....	Wabasha to Cleveland.....		14706						
Jackson.....	Viola to Sycamore.....		236	2237	145				
Jay.....	St. Anthony to Fuller.....		656						
Jenks.....	Forrest to Courtland.....		6084						
Jeanamine.....	Rice to Forrest.....		8186						

## WATER MAINS, HIGH SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Jessie .....	Case to Maryland .....		2635						
Kent .....	Portland to Carroll .....	2201							
Kenw'd Pk	St. Albans around said Park .....		767						
Knapp .....	Langford Ave to Ray- mond Ave .....		1838						
Keston .....	Dooley to Doswell .....		924						
Laura .....	Waltham to University ..		1211						
Laurel .....	Nina to Plsk .....		8297						
Lawton .....	Grand to Selby .....		480						
Long .....	Crossing of Bradford .....		115						
Lincoln .....	Oakland to Flinn .....		8390						
Louis .....	Nelson to Fuller .....		2122						
Linden .....	Mt. Airy to Arch .....		696						
Lafond .....	Rice to Milton .....		7340						
Lyndhurst E. and W.	University to Peronia .....		1850						
Lexington ..	Grand to Van Slyke .....				3818				
Langford, P. P. E.	Bayless to Knapp .....		415		427				
Langford, P. P. W.	Bayless to Gordon .....		181	670					
Langfave ..	Scudder to Dooley .....			1236	838				
Lookout P.	Arkwright to Westmins- ter .....		447						
Litchfield ..	Rice to Sylvan .....		1142						
Leslie .....	Victoria to Chatsworth ..		1256						
Lawson .....	Earl to Rice .....		7505						
Linwood P	Osceola to Grotto .....		745						
Lytton P ..	Rice to Sylvan .....		1142						
L. Como & Phalen av	At Dale street .....			23					
Mackubin ..	Summit to Edmund .....		5708						
Maple .....	Hastings to Seventh .....		2660	811					
Margaret ..	Gotzian to Greenbrier .....		4782						
Martin .....	Central to Milton .....		7739						
Maria .....	River to North .....		5481						
Marshall ...	Western to 300 ft. W. of Cleveland .....		2640	8164					
Mendota ...	Hudson to Fauquier .....		655	3286					
Mt. Airy ...	L'Orient to Robert .....		2024						
Maryland ..	Dale to Arcade .....		3855	22					
Marion .....	University to Lafond .....		1639						
Minnehaha ..	Duluth to Tatum .....		4364	7473					
Mound .....	Hastings to 335 ft. W. of Earl .....		1298	1536					
Milwaukee ..	Merriam Park to Astoria ..		570						
Manvel .....	Robbins to Raymond .....		1142						
Magnolia ...	Cypress to 120 ft. E. of Mississippi .....		5698						
Mulberry ...	Third to Sixth .....	365							
Milford .....	Rice to Woodbridge .....		655						
McLean .....	Maria to Earl .....		752						
Minne'polis	At Dale .....			18					
M'Menemy ..	Case to Jessamine .....			1652					
Mississippi ..	Great Northern Ry. to Cayuga .....		1136						
Manitoba ..	Rice to Sylvan .....		1139						
Macalester ..	Summit to Princeton .....		1885						
Mt. Ida .....	De Sota to Rivoli .....		535						
Nelson .....	Summit to Western .....		2422						
Nina .....	Summit to Selby .....		800						
North .....	Maria to Seventh .....		1035						
Nourse .....	Gordon to N. P. Ry. ....		392						
Oakland .....	Ramsey to Summit ave. ....		3662						
Olive .....	Olmsted to Pennsylvania ..		1057						
Oakley .....	Lynnhurst W. to Prior .....		451						
Osceola .....	Pleasant to Chatsworth .....		3709						
Otsego .....	Lafayette to Mt. Ida .....		791						
Park Place ..	Park Drive S. W. ....	574							

## WATER MAINS, HIGH SERVICE—Continued

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Park ave.	Martin to Viola.....		1436						
Princeton	Macalester to Baldwin.....		1399						
Pine.....	Grove to Pennsylvania.....		1820		387				
Portland.	Summit to Victoria.....		5290						
Penn'sylv'ia	Olive to Pine.....	505	342						
Plum.....	Maple to Hoffman.....		1150						
Prior.....	Selby to University.....		804	3447					
Payne.....	Omaha Ry to Ivy.....		5629						
Pascal.....	Minnehaha to Taylor.....		1743						
Pym.....	Bayless to Eustis.....			736					
Priscilla.	Raymond avenue E.....		542						
Pratt.....	Raymond to Gibbs.....		762						
Phalen.....	Seventh to Stillwater.....			1419					
Pacific.....	Cypress to Hester.....		1260						
Pleasant.	Osceola to St. Albans.....			569					
Poplar.....	N. P. R. R. Yard to Courtland.....		889						
Rice.....	College to Jessamine.....		495	2147	5990		1154		
Robert.....	171 ft. S. of University to 254 N. of same.....		425						
Rondo.....	Rice to Terrace Park av.....		10061						
Renney.....	English to Greenbrier.....		6448						
Ramey.....	Oakland to Summit.....		1259						
Ramsay.....	Atlantic to Seventh.....		2467						
Ravoux.....	Rondo to Fuller.....	616							
River.....	Maria to Hoffman.....	359							
Ravine.....	Maple to 344 ft. W. of Maria.....	1423							
Raymond.....	University to Langf. ave.....		3205		1588				
Robbins.....	Bayless to Raymond P.....		440						
Rose.....	Arcade to Edgerton.....		1497						
St. Anthony	Rice to Cleveland.....		13893						
St. Peter.....	College to University.....		2557						
Selby ave.....	Summit to Prior.....		17002						
Seventh.....	Grove to White River.....			15025					
Sherburne.....	Jackson to Chatsworth.....	400	10470						
Sinen.....	Sixth to Seventh.....		541						
Section									
Main.....	Pump house to Terminal C. P. D. E. to Baldwin.....	913	5481	13384			925		
Summit av.	Nelson to Fuller.....		2122						
Summit P.	Pleasant to Martin.....	2366	300	556					
St. Albans.	Forest to Edgerton.....		3922						
Sims.....	East of Lawton.....		362						
Sum't C. A.	Maria to Hoffman.....		591						
Short.....	Goodrich to G. N. Ry.....			11195					
Snelling.....	Blair to Hewitt.....		1528						
Simpson.....	Hoffman to Arcade.....		2646						
Sixth.....	Raymond to Bradford.....		610						
Sidney.....	Blake to Langford ave.....			1347					
Scudder.....	Victoria to Oxford.....			1935					
St. Clair.....	Gaultier to Western.....		1266						
Stinson.....	Rice to Courtland.....			2509					
Sycamore.....	Lincoln to Summit.....		967						
Syndicate.....	White Bear to Ames.....		906						
Stillwater.....	Minnehaha to Chelton.....		541						
Tatum.....	Cypress to Summit.....	367	4449						
Third.....	Pine to Broadway.....			778					
Thirteenth.	Wabasha to Rice.....		1278						
Tilton.....	Como to Chatsworth.....		7605						
Thomas.....	At Como and at Dale.....		118						
Topping.....	Charlotte to Holton.....		2467						
Taylor.....									
Teritorial									
Rond.....	Raymond to Eustis.....		1498						
University.	Broadway to Cromwell.....		40	6387	3594	19164			
Violet.....	Broadway to Jackson.....				1789				
Viola.....	Jackson to Rice.....		1653						
Victoria.....	St. Clair to Lafond.....				9518				
Virginia.....	Summit to Como.....	2432	1798						
Van Buren.	Western to Wheeler.....		6485						

## WATER MAINS ON HIGH SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Van Slyke.	Chatsworth to Lexington		1488						
Wabasha.	Summit to Park	537	842						
Western.	Summit to Como			1775	6285				
Williams.	Olive to Mississippi		857						
Waltham.	Laura to Prior	959							
Waysata.	At Albemarle		90						
Wilder.	Iglehart to St. Ant.		1388						
Whitall.	Payne to Clark		2301						
Walker.	Hewitt to Great Northern Ry.	807							
Wesley.	Pascal to Fry	394	621						
Workhouse.	Around workhouse		1043						
Wheeler St.	Bayless to Bustis C			1012					
Westmins-ter.	Lookout Place to Case		384						
Wheeler av.	Univ'ty to Shields		588						
Wo'dbridge	Atwater to Front		1297						
Winnipeg.	Rice to Sylvan		1142						
Wells.	Edgerton to Arcade		1804						
Wells, S. side.	From E. to W. end of retaining wall.	1130							
White Bear.	Seventh to Ames			1992					
York.	Forrest to Cortis'd		5782						
Total		37123	536411	118449	87188	36178	15495	9234	1560

## FEET.

Total 4 inch pipe	37,123
Total 6 inch pipe	536,411
Total 12 inch pipe	118,449
Total 16 inch pipe	87,188
Total 20 inch pipe	36,178
Total 24 inch pipe	15,495
Total 30 inch pipe	9,234
Total 36 inch pipe	1,560

Total..... 841,638 feet or 159 miles 2118 feet



## LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON HIGH SERVICE, WEST SIDE, TO DEC. 1, 1895.

STREET.	FROM STREET TO STREET.	6 In.	12 In.	16 In.
Annapolis	At Manomin		100	
Baker	Bidwell to Cherokee		3,539	
Belvidere	S. Robert to Oakdale	851		
Bidwell	Morton to George		32	362
Bunker	Oakdale to Brown	1,808		
Curtis	Oakdale to 250 ft. e. of Woodbury	1,437		
Cherokee	Annapolis to Smith	4,241		
	From Annapolis to Tank		100	
George	Stryker to 40 ft. w. of Manomin	3,334		
Hall	Elizabeth to Morton	583		
Manomin	Baker to Annapolis		2,540	
Morton	Robert to Bidwell			2,672
Oakdale	Midway to Curtis	1,319		
Ohio	Winona to Winnifred	3,481		
Orleans	Cherokee to Page	2,517		
Page	Robert to Howard	1,344		170
Robert	Belvidere to Morton		594	606
State	Page to pump house			140
Stryker	Tyler to Augusta	791		
Sidney	Ottawa to Cherokee	346		
Total		22,052	6,905	3,950

	Feet.
Total 6-inch pipe	22,052
Total 12-inch pipe	6,905
Total 16-inch pipe	3,950

32,907 feet, or 6 miles, 1,227 feet.  
Total pipe on low and high service and high service, West Side, to Dec. 1, 1895.

	Feet.
Low service	359,499
High service	841,638
High service, West Side	32,907

Total.....1,234,044 feet, or 233 miles, 3,804 feet.  
Also  $4\frac{1}{2}$  miles brick aqueduct,  $5\frac{1}{2} \times 6$  feet, with necessary waste weirs and gate houses.

## LIST OF HYDRANTS.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STRAKER.	SIZE OF PIPE.	Pressure
1	Woodward and Monroe, s. e. cor.....	Low	Single	4	
2	Grove and Lafayette, n. w. cor.....	Low	Single	6	
3	Westminster and Waverly, n. w. cor.....	Low	Single	6	
4	Westminster, 400 feet north of Waverly.....	Low	Single	6	
5	Grove and Olive, n. e. cor.....	Low	Single	6	
6	John and Somerset, n. w. cor.....	Low	Single	4	
7	Olive and Somerset, n. w. cor.....	Low	Single	4	
8	Pine and Thirteenth, n. w. cor.....	Low	Single	6	
9	Thirteenth and Mississippi, s. e. cor.....	Low	Single	6	
10	Grove and Mississippi, n. w. cor.....	Low	Single	20	
11	Van Slyke P. and Pine, s. w. cor.....	Low	Single	4	
12	Canada and Grove, s. w. cor.....	Low	Single	6	
13	Canada and Spruce, s. w. cor.....	Low	Single	6	
14	Grove, in Middle of block, between Canada and Temperance.....	Low	Single	20	
15	Jackson and Grove, n. e. cor.....	Low	Single	6	
16	Robert and Twelfth, s. e. cor.....	Low	Single	6	
17	Robert and Eleventh, n. e. cor.....	Low	Single	6	
18	Eleventh and Minnesota, n. e. cor.....	Low	Single	6	
19	Eleventh and Cedar, n. e. cor.....	Low	Single	6	
20	College and Wabasha, s. w. cor.....	Low	Single	6	
21	Wabasha and Tenth, n. w. cor.....	Low	Single	6	
22	St. Peter and Tenth, s. w. cor.....	Low	Single	6	
23	St. Peter and College, n. w. cor.....	High	Single	6	
24	St. Peter and Summit, n. w. cor.....	High	Single	6	
25	Tenth and College, s. w. cor.....	Low	Single	6	
26	Tenth, between St. Peter and Port.....	Low	Single	20	
27	St. Peter and Exchange, s. w. cor.....	Low	Single	6	
28	Wabasha and Exchange, n. w. cor.....	Low	Single	6	
29	St. Peter and Ninth, s. w. cor.....	Low	Single	6	
30	Wabasha and Ninth, s. w. cor.....	Low	Single	6	
31	Ninth and Jackson, n. e. cor.....	Low	Single	6	
32	Ninth and Sibley, n. w. cor.....	Low	Single	6	
33	Ninth and Canada, n. e. cor.....	Low	Single	6	
34	Ninth and Pine, s. w. cor.....	Low	Single	6	
35	Ninth and John, s. w. cor.....	Low	Single	6	
36	Ninth and Locust, s. w. cor.....	Low	Single	6	
37	Eighth and Locust, n. e. cor.....	Low	Single	4	
38	Fifth and Locust, n. e. cor.....	Low	Single	6	
39	Eighth and Olive, n. w. cor.....	Low	Single	4	
40	Broadway and Eighth, n. w. cor.....	Low	Single	6	
41	Eighth and Wacouta, n. e. cor.....	Low	Single	4	
42	Jackson and Eighth, n. e. cor.....	Low	Double	12	
43	Robert and Eighth, s. e. cor.....	Low	Single	6	
44	Burr and Partridge, s. e. cor.....	Low	Single	6	
45	Burr and Hopkins, s. e. cor.....	Low	Single	6	
46	DeSoto and Hopkins, n. e. cor.....	Low	Single	6	
47	Third and Smith ave, n. e. cor.....	Low	Single	6	
48	Third and Pleasant, n. e. cor.....	Low	Single	6	
49	College and Third, n. e. cor.....	High	Single	6	
50	Exchange and Sherman, s. e. cor.....	Low	Single	4	
51	Walnut and Exchange, n. e. cor.....	Low	Single	4	
52	Sherman and Seventh, s. e. cor.....	Low	Single	6	
53	Seventh and Walnut, s. e. cor.....	Low	Double	20	
54	Chestnut and Seventh, n. e. cor.....	Low	Single	6	
55	Port and Third, n. w. cor.....	Low	Single	20	
56	Fourth and Seventh, s. e. cor.....	Low	Single	16	
57	Seventh and Exchange, s. w. cor.....	Low	Double	16	
58	Seventh and Fifth, s. w. cor.....	Low	Double	16	
59	Seventh and Franklin, s. w. cor.....	Low	Double	16	
60	Seventh and Sixth, s. e. cor.....	Low	Double	16	
61	Seventh and St. Peter, n. e. cor.....	Low	Double	16	
62	Seventh and Wabasha, n. w. cor.....	Low	Double	16	
63	Cedar and Seventh, n. w. cor.....	Low	Single	12	
64	Seventh and Minnesota, n. w. cor.....	Low	Single	16	
65	Seventh and Robert, n. w. cor.....	Low	Double	16	
66	Jackson and Seventh, n. e. cor.....	Low	Double	12	

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
67	Seventh and Sibley, n. w. cor.....	Low .....	Double .....	16 .....	45
68	Seventh and Wacouta, n. e. cor.....	Low .....	Double .....	16 .....	44
69	Seventh and Rosabel, n. w. cor.....	Low .....	Double .....	16 .....	44
70	Broadway and Seventh, s. w. cor.....	Low .....	Single .....	16 .....	44
71	Seventh and Pine, s. w. cor.....	Low .....	Double .....	16 .....	43
72	Seventh and Olive, s. w. cor.....	Low .....	Double .....	16 .....	43
73	Seventh and John, s. w. cor.....	Low .....	Double .....	16 .....	45
74	Seventh and Locust, s. w. cor.....	Low .....	Double .....	16 .....	46
75	Seventh and Neill, s. e. cor.....	Low .....	Single .....	6 .....	49
76	Willius and Sixth, n. e. cor.....	Low .....	Single .....	4 .....	50
77	Sixth and Pine, s. e. cor.....	Low .....	Single .....	4 .....	44
78	Jackson and Sixth, n. e. cor.....	Low .....	Double .....	12 .....	46
79	Robert and Sixth, n. e. cor.....	Low .....	Single .....	6 .....	46
80	Sixth and Minnesota, s. e. cor.....	Low .....	Single .....	8 .....	44
81	Sixth and Wabasha, n. w. cor.....	Low .....	Single .....	6 .....	31
82	Fifth and Washington, s. e. cor.....	Low .....	Single .....	4 .....	32
83	Fifth and Wabasha, n. w. cor.....	Low .....	Single .....	6 .....	34
84	Cedar, 100 feet S. of Fifth, s. w. cor.....	Low .....	Double .....	4 .....	42
85	Fifth and Minnesota, s. e. cor.....	Low .....	Single .....	12 .....	44
86	Robert and Fifth, s. e. cor.....	Low .....	Single .....	6 .....	46
87	Jackson and Fifth, s. e. cor.....	Low .....	Double .....	12 .....	47
88	Fourth and Sibley, n. e. cor.....	Low .....	Single .....	6 .....	54
89	Jackson and Fourth, s. e. cor.....	Low .....	Double .....	12 .....	52
90	Fourth and Robert, n. w. cor.....	Low .....	Single .....	6 .....	46
91	Fourth and Minnesota, n. w. cor.....	Low .....	Single .....	6 .....	45
92	Fourth and Wabasha, n. w. cor.....	Low .....	Single .....	6 .....	32
93	Washington and Fourth, n. w. cor.....	Low .....	Single .....	4 .....	33
94	Third and Exchange, n. w. cor.....	Low .....	Single .....	12 .....	35
95	Third, between Exchange and Franklin .....	Low .....	Single .....	12 .....	35
96	Third and Franklin, n. e. cor.....	Low .....	Single .....	12 .....	34
97	Third and Washington, n. e. cor.....	Low .....	Single .....	12 .....	34
98	Third and Market, n. e. cor.....	Low .....	Single .....	12 .....	33
99	Washington and Eagle, n. w. cor.....	Low .....	Single .....	4 .....	64
100	Third and St. Peter, n. e. cor.....	Low .....	Single .....	12 .....	33
101	Wabasha and Third, n. w. cor.....	Low .....	Single .....	6 .....	33
102	Cedar and Third, n. w. cor.....	Low .....	Single .....	12 .....	33
103	Third and Minnesota, n. e. cor.....	Low .....	Double .....	12 .....	40
104	Third and Robert, n. w. cor.....	Low .....	Double .....	12 .....	47
105	Third and Jackson, s. e. cor.....	Low .....	Single .....	12 .....	54
106	Sibley and Third, s. w. cor.....	Low .....	Double .....	6 .....	62
107	Jackson and Levee, n. e. cor.....	Low .....	Single .....	6 .....	67
108	Jackson and Tenth, n. e. cor.....	Low .....	Single .....	12 .....	34
109	Jackson and Eleventh.....	Low .....	Single .....	12 .....	33
110	Sibley and Levee, n. w. cor.....	Low .....	Single .....	4 .....	69
111	St. Peter and Fifth, n. w. cor.....	Low .....	Single .....	6 .....	33
112	Ninth and Robert, n. e. cor.....	Low .....	Single .....	6 .....	35
113	Tenth and Wacouta, n. w. cor.....	Low .....	Single .....	4 .....	41
114	Mississippi and Nash, n. w. cor.....	Low .....	Single .....	6 .....	35
115	Broadway and Twelfth.....	Low .....	Single .....	6 .....	40
116	Broadway and Tenth, s. w. cor.....	Low .....	Single .....	6 .....	43
117	Elm and Franklin, n. e. cor.....	Low .....	Single .....	4 .....	37
118	Ninth and Cedar, n. w. cor.....	Low .....	Single .....	6 .....	35
119	Fourth and St. Peter, n. w. cor.....	Low .....	Single .....	6 .....	32
120	Sixth and Cedar, s. e. cor.....	Low .....	Double .....	8 .....	43
121	Fourth and Franklin, n. e. cor.....	Low .....	Single .....	6 .....	33
122	Seventh and Leech, s. w. cor.....	Low .....	Single .....	12 .....	35
123	Grove and John, n. e. cor.....	Low .....	Single .....	6 .....	40
124	Grove and Pine, n. w. cor.....	Low .....	Single .....	6 .....	40
125	Canada and Tenth, s. w. cor.....	Low .....	Single .....	6 .....	41
126	Ninth and Wacouta, n. w. cor.....	Low .....	Single .....	6 .....	42
127	Eighth and Temperance, n. e. cor.....	Low .....	Single .....	4 .....	45
128	Seventh and Willius, s. e. cor.....	Low .....	Single .....	6 .....	48
129	Seventh and Kittson, s. w. cor.....	Low .....	Single .....	6 .....	51
130	Ramsey and Leech.....	Low .....	Single .....	6 .....	36
131	Collins and Lafayette, n. e. cor.....	Low .....	Single .....	6 .....	28
132	Sibley and Sixth, s. w. cor.....	Low .....	Single .....	8 .....	47
133	Willius and Fifth, n. e. cor.....	Low .....	Single .....	4 .....	58
134	Eighth and Willius, n. e. cor.....	Low .....	Single .....	4 .....	45
135	Sibley and Tenth, s. e. cor.....	Low .....	Single .....	4 .....	40



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
136	Pleasant, between Third and Chestnut.....	Low .....	Single .....	6 .....	28
137	Pleasant and Chestnut, n. w. cor.....	Low .....	Single .....	6 .....	29
138	Pleasant and Walnut, n. w. cor.....	Low .....	Single .....	6 .....	30
139	Smith avenue, between Third and Chestnut.....	Low .....	Single .....	6 .....	32
140	Port, between Ninth and Tenth.....	Low .....	Single .....	20 .....	30
141	Port and Ninth, s. w. cor.....	Low .....	Single .....	20 .....	29
142	Port and Sixth, s. w. cor.....	Low .....	Single .....	20 .....	32
143	Port and Fifth, s. w. cor.....	Low .....	Single .....	20 .....	32
144	Canada and Thirteenth, s. w. cor.....	Low .....	Single .....	6 .....	39
145	Thirteenth, bet. Canada and Temperance.....	Low .....	Single .....	6 .....	37
146	Thirteenth and Temperance.....	Low .....	Single .....	6 .....	36
147	Mississippi and Mt. Airy, n. w. cor.....	Low .....	Single .....	6 .....	33
148	Mississippi and Glencoe, n. w. cor.....	Low .....	Single .....	6 .....	30
149	Mississippi, bet. Glencoe and Pennsylvania.....	Low .....	Single .....	6 .....	29
150	Mississippi and Pennsylvania, n. w. cor.....	Low .....	Single .....	6 .....	26
151	Pine and Nash, s. w. cor.....	Low .....	Single .....	6 .....	39
152	Olmstead and Pine, n. e. cor.....	Low .....	Single .....	6 .....	38
153	Olmstead and Olive, n. w. cor.....	Low .....	Single .....	6 .....	40
154	Olmstead and John, n. w. cor.....	Low .....	Single .....	6 .....	40
155	Ninth and Exchange, n. e. cor.....	Low .....	Single .....	6 .....	31
156	Ninth and Franklin, n. e. cor.....	Low .....	Single .....	6 .....	32
157	Wabasha and Summit, s. w. cor.....	Low .....	Single .....	6 .....	19
158	Robert and Tenth, n. e. cor.....	Low .....	Single .....	6 .....	30
159	Canada and Norris, s. w. cor.....	Low .....	Single .....	6 .....	35
160	Norris and Sibley.....	Low .....	Single .....	4 .....	37
161	Spruce and Wacouta.....	Low .....	Single .....	4 .....	40
162	Spruce and Sibley.....	Low .....	Single .....	4 .....	38
163	College, between St. Peter and Tenth.....	Low .....	Single .....	6 .....	22
164	Fourth and Wacouta, n. w. cor.....	Low .....	Single .....	6 .....	58
165	Sibley and Fifth, s. w. cor.....	Low .....	Single .....	6 .....	50
166	Walnut and Smith avenue, n. e. cor.....	Low .....	Single .....	4 .....	36
167	Fourth and Rosabel, n. w. cor.....	Low .....	Single .....	6 .....	62
168	Broadway, 150 ft. s. of Third.....	Low .....	Single .....	16 .....	69
169	Third and Broadway, n. e. cor.....	Low .....	Double .....	12 .....	67
170	Third and Rosabel, n. w. cor.....	Low .....	Double .....	12 .....	66
171	Third and Wacouta, n. w. cor.....	Low .....	Double .....	12 .....	64
172	Rice and Summit, s. w. cor.....	High .....	Single .....	6 .....	72
173	Fourth and Market, n. w. cor.....	Low .....	Single .....	6 .....	32
174	Collins and Bedford, n. w. cor.....	Low .....	Single .....	6 .....	30
175	Burr and Collins, n. w. cor.....	Low .....	Single .....	6 .....	21
176	Tenth and Pine, n. w. cor.....	Low .....	Single .....	6 .....	43
177	Tenth and Olive, n. w. cor.....	Low .....	Single .....	6 .....	44
178	Tenth and John, n. w. cor.....	Low .....	Single .....	6 .....	43
179	Canada and Fourteenth, n. w. cor.....	Low .....	Single .....	6 .....	37
180	Fourteenth, between Canada and Jackson.....	Low .....	Single .....	6 .....	37
181	Partridge and Bradley, n. w. cor.....	Low .....	Single .....	4 .....	38
182	Fourth and Broadway, n. w. cor.....	Low .....	Single .....	6 .....	62
183	Exchange and Sixth, s. w. cor.....	Low .....	Single .....	4 .....	32
184	North and Burr.....	Low .....	Single .....	6 .....	30
185	North and DeSota, n. e. cor.....	Low .....	Single .....	6 .....	27
186	Rosabel and Fifth, n. w. cor.....	Low .....	Single .....	6 .....	55
187	Rosabel and Sixth, n. w. cor.....	Low .....	Single .....	6 .....	48
188	Pleasant and Sherman.....	Low .....	Single .....	6 .....	33
189	Fourth and Jackson, n. w. cor.....	Low .....	Single .....	6 .....	51
190	John and Fourth, n. e. cor.....	Low .....	Single .....	6 .....	65
191	John and Fifth, n. e. cor.....	Low .....	Single .....	6 .....	56
192	John and Sixth, n. e. cor.....	Low .....	Single .....	6 .....	46
193	Bruno and Lafayette, s. e. cor.....	Low .....	Single .....	6 .....	40
194	Canada and University, s. w. cor.....	Low .....	Single .....	6 .....	30
195	Becker and Lafayette, s. e. cor.....	Low .....	Single .....	6 .....	33
196	Pleasant and Third, s. w. cor.....	Low .....	Single .....	6 .....	24
197	Jackson and Thirteenth, n. e. cor.....	Low .....	Single .....	6 .....	34
198	Jackson and Fourteenth, n. e. cor.....	Low .....	Single .....	6 .....	31
199	Wilkin and McBoal, s. w. cor.....	Low .....	Single .....	6 .....	36
200	Wacouta and Third, s. e. cor.....	Low .....	Single .....	6 .....	65
201	McBoal and Leech, n. w. cor.....	Low .....	Single .....	12 .....	35
202	Wacouta and Sixth, n. e. cor.....	Low .....	Single .....	6 .....	48
203	Wacouta and Fifth, n. e. cor.....	Low .....	Single .....	6 .....	52
204	Fifth and Broadway, n. w. cor.....	Low .....	Single .....	12 .....	53

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
205	Sixth and Broadway, s. w. cor.	Low	Single	4	50
206	Tenth and Minnesota, n. e. cor.	Low	Single	6	30
207	Tenth and Cedar, n. e. cor.	Low	Single	6	29
208	Jackson and University, s. e. cor.	Low	Single	6	23
209	Cedar and Eighth, n. w. cor.	Low	Single	12	40
210	Cedar and Exchange, n. w. cor.	Low	Single	12	32
211	Ninth and Minnesota, n. e. cor.	Low	Single	6	37
212	Wilkin and Forbes, n. w. cor.	Low	Single	6	37
213	Fifth and Neill, n. e. cor.	Low	Single	6	59
214	Kittson and Fifth, n. w. cor.	Low	Single	6	61
215	Kittson and Sixth, n. w. cor.	Low	Single	6	56
216	Sixth and Neill, s. e. cor.	Low	Single	4	53
217	Otsego and Mt. Ida, s. w. cor.	High	Single	6	72
218	Bradley and Woodward, n. w. cor.	Low	Single	6	41
219	Bradley and North, s. w. cor.	Low	Single	6	34
220	Hopkins and Bradley, s. w. cor.	Low	Single	6	36
221	Smith avenue and Chestnut, s. w. cor.	Low	Single	6	34
222	Bedford and Beaumont, s. w. cor.	Low	Single	6	24
223	Bedford and Minnehaha, s. w. cor.	Low	Single	6	18
224	Thompson and Pleasant, s. w. cor.	Low	Single	6	34
225	Thompson and Ramsey, n. w. cor.	Low	Single	6	35
226	Smith avenue and Forbes, n. w. cor.	Low	Single	6	34
227	Fourth and Cedar, n. w. cor.	Low	Single	6	39
228	Eighth and Minnesota, n. w. cor.	Low	Single	4	40
229	Beaumont and Bradley, n. w. cor.	Low	Single	6	22
230	Beaumont and De Soto, n. e. cor.	Low	Single	6	21
231	Burr and Beaumont, n. w. cor.	Low	Single	6	19
232	Burr and Minnehaha, n. w. cor.	Low	Single	6	15
233	Burr and Fauquier, s. e. cor.	Low	Single	6	18
234	Smith avenue and Seventh street, s. w. cor.	Low	Single	6	34
235	Fourth and Pine, n. e. cor.	Low	Single	12	59
236	Fourth and Olive, n. w. cor.	Low	Single	12	64
237	Forbes and Seventh, n. e. cor.	Low	Single	6	34
238	Fourth and Exchange, n. e. cor.	Low	Single	6	34
239	McBoal and Seventh, n. e. cor.	Low	Single	6	33
240	St. Peter and Sixth, s. w. cor.	Low	Single	6	33
241	Prince and Pine, n. w. cor.	Low	Single	6	65
242	Prince and Olive	Low	Single	6	65
243	Prince and John	Low	Single	6	66
244	Mt. Airy and L'Orient, n. e. cor.	Low	Single	6	21
245	Smith avenue and Fifth, n. w. cor.	Low	Single	6	31
246	Smith avenue and Sixth, n. w. cor.	Low	Single	6	29
247	Smith avenue and College, s. w. cor.	Low	Single	6	18
248	Douglas and Seventh, s. w. cor.	Low	Single	6	34
249	Goodrich and Seventh, n. e. cor.	Low	Single	6	34
250	Goodrich and Smith avenue, n. e. cor.	Low	Single	6	38
251	Goodrich and Leech, n. w. cor.	Low	Single	6	41
252	Capitol and Mississippi, n. w. cor.	High	Single	6	75
253	Genesee and Mississippi, n. w. cor.	High	Single	6	79
254	Granite and Mississippi, n. w. cor.	High	Single	6	84
255	Second and Robert, n. e. cor.	Low	Single	6	57
256	Pleasant and Ramsey	Low	Single	6	32
257	Ramsey and Douglas	Low	Single	6	34
258	Sherman and Franklin, s. e. cor.	Low	Single	6	38
259	Chestnut and Exchange, n. e. cor.	Low	Single	6	49
260	Exchange and Eagle, s. w. cor.	Low	Single	4	50
261	Williams and Pine, n. e. cor.	High	Single	6	73
262	Pine, 200 feet south of Williams	High	Single	6	60
263	Topping and Como, n. w. cor.	High	Single	6	56
264	Capitol and Western, n. w. cor.	High	Single	6	54
265	Blair and Western, n. w. cor.	High	Single	6	57
266	Thomas and Western, n. w. cor.	High	Single	6	55
267	University and Western, n. w. cor.	High	Single	12	56
268	Aurora and Western, n. w. cor.	High	Single	6	54
269	Fuller and Western, n. w. cor.	High	Single	6	52
270	Martin and Western, n. w. cor.	High	Single	6	51
271	St. Anthony and Western, n. w. cor.	High	Single	6	54
272	Rondo and Western, n. w. cor.	High	Single	6	57
273	Carroll and Western, n. w. cor.	High	Single	6	46

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
274	Iglehart and Western, n. w. cor.....	High.....	Single.....	6	36
275	Marshall and Western, n. w. cor.....	High.....	Single.....	6	32
276	Dayton and Western, n. e. cor.....	High.....	Single.....	12	31
277	Western and Selby, n. w. cor.....	High.....	Single.....	12	32
278	Western and Laurel, n. w. cor.....	High.....	Single.....	12	31
279	Western and Ashland, n. w. cor.....	High.....	Single.....	12	33
280	Western and Holly, n. w. cor.....	High.....	Single.....	12	34
281	Western and Portland, n. w. cor.....	High.....	Single.....	12	34
282	Summit and Portland.....	High.....	Single.....	12	34
283	Summit and Arundel, n. e. cor.....	High.....	Single.....	12	31
284	Summit and Mackubin, n. e. cor.....	High.....	Single.....	12	30
285	Summit and Kent, n. e. cor.....	High.....	Single.....	12	36
286	Summit and Oakland.....	High.....	Single.....	12	35
287	Holly and Dale, n. e. cor.....	High.....	Single.....	6	36
288	Holly and Kent, n. e. cor.....	High.....	Single.....	6	34
289	Holly and Mackubin, n. e. cor.....	High.....	Single.....	6	32
290	Holly and Arundel, n. e. cor.....	High.....	Single.....	6	33
291	Ashland and Arundel, n. e. cor.....	High.....	Single.....	6	32
292	Ashland and Mackubin, n. e. cor.....	High.....	Single.....	6	30
293	Ashland and Kent, n. e. cor.....	High.....	Single.....	6	38
294	Ashland and Dale, n. e. cor.....	High.....	Single.....	6	37
295	Laurel and Dale, n. e. cor.....	High.....	Single.....	6	35
296	Laurel and Kent, n. e. cor.....	High.....	Single.....	6	31
297	Laurel and Mackubin, n. w. cor.....	High.....	Single.....	6	30
298	Laurel and Arundel, n. e. cor.....	High.....	Single.....	6	30
299	Dayton and Dale, n. e. cor.....	High.....	Single.....	12	30
300	Dayton and Kent, n. e. cor.....	High.....	Single.....	12	28
301	Dayton and Mackubin, n. e. cor.....	High.....	Single.....	12	29
302	Dayton and Arundel, n. e. cor.....	High.....	Single.....	12	33
303	Dayton and Virginia, n. e. cor.....	High.....	Single.....	12	30
304	Dayton and Farrington, n. e. cor.....	High.....	Single.....	12	30
305	Dayton, between Summit and Farrington.....	High.....	Single.....	12	31
306	Summit and Dayton, s. w. cor.....	High.....	Single.....	6	43
307	Summit and Selby, s. w. cor.....	High.....	Single.....	6	37
308	Summit, head of Walnut.....	High.....	Single.....	6	37
309	Summit and Nina, n. w. cor.....	High.....	Single.....	6	33
310	Summit and Farrington, n. w. cor.....	High.....	Single.....	6	31
311	Summit and Virginia, n. w. cor.....	High.....	Single.....	6	33
312	Farrington and Laurel, n. w. cor.....	High.....	Single.....	6	32
313	Farrington and Selby avenue, s. w. cor.....	High.....	Single.....	6	31
314	Selby and Nina.....	High.....	Single.....	6	32
315	Nina and Laurel, n. w. cor.....	High.....	Single.....	6	32
316	Westminster, 200 ft. S. of G. N. Ry.....	Low.....	Single.....	6	30
317	Thirteenth and Broadway, n. w. cor.....	Low.....	Single.....	6	39
318	Temprance and Norris, n. e. cor.....	Low.....	Single.....	4	37
319	Banfil and Seventh, n. e. cor.....	Low.....	Single.....	4	33
320	Goodhue and Seventh, n. e. cor.....	Low.....	Single.....	6	38
321	Yankee and Seventh, n. e. cor.....	Low.....	Single.....	4	34
322	Western and Seventh, s. w. cor.....	Low.....	Single.....	6	35
323	St. Clair and Seventh, n. e. cor.....	Low.....	Single.....	6	34
324	Richmond and Seventh, s. w. cor.....	Low.....	Single.....	6	34
325	Seventh and Colburne, s. e. cor.....	Low.....	Single.....	16	36
326	Chestnut and Franklin, n. w. cor.....	Low.....	Single.....	6	52
327	Twelfth and Jackson, n. w. cor.....	Low.....	Single.....	20	32
328	Twelfth and Minnesota, n. w. cor.....	Low.....	Single.....	20	29
329	Twelfth and Cedar, n. e. cor.....	Low.....	Single.....	20	27
330	Cedar and Summit, s. w. cor.....	Low.....	Single.....	6	23
331	Chestnut and Washington, n. w. cor.....	Low.....	Single.....	6	62
332	Laurel and Virginia, n. w. cor.....	High.....	Single.....	6	32
333	Selby and Virginia, n. w. cor.....	High.....	Single.....	6	32
334	Mackubin and Laurel, s. w. cor.....	High.....	Single.....	6	30
335	Portland and Arundel, n. e. cor.....	High.....	Single.....	6	32
336	Portland and Mackubin, n. e. cor.....	High.....	Single.....	6	29
337	Portland and Kent, n. e. cor.....	High.....	Single.....	6	34
338	Portland and Dale, n. e. cor.....	High.....	Single.....	6	34
339	Selby and Arundel, n. e. cor.....	High.....	Single.....	6	33
340	Selby and Mackubin, n. e. cor.....	High.....	Single.....	6	29
341	Selby and Kent, n. e. cor.....	High.....	Single.....	6	29
342	Selby and Dale, n. e. cor.....	High.....	Single.....	6	31



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
343	Carroll and Arundel, n. w. cor.	High	Single	6	36
344	Carroll and Mackubin, n. e. cor.	High	Single	6	34
345	Carroll and Kent, n. e. cor.	High	Single	6	30
346	Kent and Iglehart, n. w. cor.	High	Single	4	29
347	Marshall and Dale, n. e. cor.	High	Single	6	31
348	Marshall and Kent, n. e. cor.	High	Single	6	27
349	Marshall and Mackubin, n. w. cor.	High	Single	6	31
350	Rondo and Arundel, n. w. cor.	High	Single	6	55
351	Rondo and Mackubin, n. e. cor.	High	Single	6	42
352	Iglehart and Arundel, n. w. cor.	High	Single	6	31
353	Iglehart and Mackubin, n. e. cor.	High	Single	6	33
354	Marshall and Arundel, n. w. cor.	High	Single	6	31
355	McBoal and Douglas, n. e. cor.	Low	Single	6	33
356	Douglas and Harrison, n. w. cor.	Low	Single	6	33
357	Summit and Third	High	Single	12	50
358	Summit and Nelson, n. w. cor.	High	Single	12	52
359	College and Sixth, s. e. cor.	High	Single	6	70
360	Nelson and Virginia, n. w. cor.	High	Single	6	30
361	Nelson and Farrington, n. w. cor.	High	Single	6	31
362	Nelson and Louis, n. w. cor.	High	Single	6	43
363	Nelson and Summit Place, n. w. cor.	High	Single	6	48
364	Carroll and Virginia, n. w. cor.	High	Single	6	48
365	Carroll and Farrington, n. e. cor.	High	Single	6	50
366	Carroll and Louis, n. w. cor.	High	Single	6	56
367	Carroll and Summit Place, n. w. cor.	High	Single	6	60
368	Carroll and Ravoux, n. e. cor.	High	Single	6	63
369	Park Place Park	High	Single	4	67
370	Iglehart and Virginia, n. w. cor.	High	Single	6	39
371	Iglehart and Farrington, n. w. cor.	High	Single	6	40
372	Iglehart and Louis, n. w. cor.	High	Single	6	50
373	Douglas and Lisbon, n. w. cor.	Low	Single	6	35
374	Iglehart and St. Peter, n. w. cor.	High	Single	6	65
375	Iglehart and Wabasha, n. w. cor.	High	Single	6	72
376	Iglehart and Summit Place, n. e. cor.	High	Single	6	54
377	Iglehart and Ravoux, n. e. cor.	High	Single	6	63
378	Iglehart and Rice, n. w. cor.	High	Single	6	68
379	Rice and Rondo, n. w. cor.	High	Single	16	65
380	Rice and St. Anthony, n. w. cor.	High	Single	16	57
381	Rice and Martin, n. w. cor.	High	Single	16	58
382	Rice and Fuller, n. w. cor.	High	Single	16	57
383	Rice and Aurora, n. w. cor.	High	Single	16	57
384	Rice and University, n. w. cor.	High	Single	20	54
385	Rice and Sherburne, n. w. cor.	High	Single	20	53
386	Rice and Charles, n. w. cor.	High	Single	20	55
387	Rice and Edmund, n. w. cor.	High	Single	20	56
388	Rice and Como, n. w. cor.	High	Single	12	56
389	Tilton and St. Peter, n. w. cor.	High	Single	6	61
390	Smith avenue and Ramsey	Low	Single	6	35
391	St. Peter and Martin, n. w. cor.	High	Single	6	60
392	Martin and Park, n. w. cor.	High	Single	6	62
393	Central and Wabasha, n. w. cor.	High	Single	6	66
394	Tilton and Wabasha, n. w. cor.	High	Single	6	67
395	Central and Cedar, n. w. cor.	High	Single	6	60
396	Aurora and Cedar, n. e. cor.	High	Single	6	53
397	Aurora and Robert, n. w. cor.	High	Single	6	67
398	Smith avenue and Sherman, n. e. cor.	Low	Single	6	36
399	Bradley and Seventh, n. w. cor.	Low	Single	6	40
400	Broadway and Fourteenth, n. w. cor.	High	Single	4	38
401	Summit and Dale, n. w. cor.	High	Single	12	33
402	Seventh and Brook	Low	Single	6	49
403	Tenth and Cedar, n. w. cor.	Low	Single	20	29
404	Grand and Lawton, n. w. cor.	High	Single	6	34
405	Grand and Floral, n. w. cor.	High	Single	6	31
406	Grand and Oakland, n. w. cor.	High	Single	6	46
407	Grand and Dale, n. w. cor.	High	Single	6	38
408	Grand and St. Albans, n. w. cor.	High	Single	6	37
409	Valley and Broadway, n. w. cor.	High	Single	16	86
410	Grand and Grotto, n. w. cor.	High	Single	6	33
411	Grand and Avon, n. w. corner	High	Single	6	31

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT
412	Grand and Victoria, n. e. cor.....	High.....	Single.....	6	
413	University and Marion, n. e. cor.....	High.....	Single.....	12	
414	University and Gaultier, n. w. cor.....	High.....	Single.....	12	
415	University and Farrington, n. e. cor.....	High.....	Single.....	12	
416	University and Virginia, n. w. cor.....	High.....	Single.....	12	
417	Marshall and St. Albans, n. e. cor.....	High.....	Single.....	12	
418	University and Arundel, n. e. cor.....	High.....	Single.....	12	
419	Dayton and St. Albans, n. e. cor.....	High.....	Single.....	6	
420	Dayton and Grotto, n. e. cor.....	High.....	Single.....	6	
421	Dayton and Avon, n. e. cor.....	High.....	Single.....	6	
422	Dayton and Fisk, n. e. cor.....	High.....	Single.....	6	
423	St. Peter and Aurora, s. w. cor.....	High.....	Single.....	6	
424	St. Peter and University, s. w. cor.....	High.....	Single.....	6	
425	Park and University, n. w. cor.....	High.....	Single.....	6	
426	Cedar and University, n. w. cor.....	High.....	Single.....	6	
427	Cedar and Sherburne, n. w. cor.....	High.....	Single.....	6	
428	Sherburne, 350 feet east of Cedar.....	High.....	Single.....	4	
429	Hoffman and Seventh, s. w. cor.....	High.....	Single.....	6	
430	Fourth, 400 feet west of Maria.....	High.....	Single.....	6	
431	Maria and Seventh, s. w. cor.....	High.....	Single.....	6	
432	Maria and Sixth, n. w. cor.....	High.....	Single.....	6	
433	Maria and Fifth, n. w. cor.....	High.....	Single.....	6	
434	Maria and Fourth, n. w. cor.....	High.....	Single.....	6	
435	Maria and Third, n. w. cor.....	High.....	Single.....	6	
436	Maria and Conway, n. w. cor.....	High.....	Single.....	6	
437	Maria and Ravine, n. w. cor.....	High.....	Single.....	6	
438	Maria and Euclid, n. w. cor.....	High.....	Single.....	6	
439	Maria and Hudson, n. w. cor.....	High.....	Single.....	6	
440	Bates and Plum, n. w. cor.....	High.....	Single.....	12	
441	Bates and Hudson, n. w. cor.....	High.....	Single.....	12	
442	Bates and Euclid, n. w. cor.....	High.....	Single.....	12	
443	Bates and Ravine, n. w. cor.....	High.....	Single.....	12	
444	Bates and Conway, n. w. cor.....	High.....	Single.....	12	
445	Bates and Third, n. w. cor.....	High.....	Single.....	12	
446	Bates and Fourth, n. w. cor.....	High.....	Single.....	12	
447	Bates and Fifth, n. w. cor.....	High.....	Single.....	12	
448	Bates and Sixth, n. w. cor.....	High.....	Single.....	12	
449	Bates and Seventh, s. w. cor.....	High.....	Single.....	12	
450	Fifth and Maple, n. w. cor.....	High.....	Single.....	6	
451	Third and Maple, n. w. cor.....	High.....	Single.....	6	
452	Hudson and Maple, n. w. cor.....	High.....	Single.....	6	
453	Valley and Canada.....	High.....	Single.....	16	
454	Seventh and Maple, n. e. cor.....	High.....	Single.....	16	
455	Seventh and Hope, n. w. cor.....	High.....	Single.....	16	
456	Seventh and Margaret, n. e. cor.....	High.....	Single.....	16	
457	Seventh and Beech, n. e. cor.....	High.....	Single.....	16	
458	Goodhue and Dousman, n. e. cor.....	Low.....	Single.....	6	
459	Goodhue and Cliff, n. w. cor.....	Low.....	Single.....	6	
460	Grace and Colborne, s. w. cor.....	Low.....	Single.....	6	
461	Colborne and Jefferson, n. w. cor.....	Low.....	Single.....	6	
462	Duke and Seventh, s. w. cor.....	Low.....	Single.....	6	
463	Seventh and Minnehaha, n. w. cor.....	High.....	Single.....	16	
464	Seventh and Reaney, n. w. cor.....	High.....	Single.....	16	
465	Seventh and Forrest, n. w. cor.....	High.....	Single.....	16	
466	Nash and L'Orient, n. e. cor.....	Low.....	Single.....	6	
467	Jessie and Fauquier, s. w. cor.....	Low.....	Single.....	6	
468	Seventh and Erie, s. e. cor.....	Low.....	Single.....	16	
469	Seventh and Fauquier, n. w. cor.....	High.....	Single.....	16	
470	Seventh and Cypress, n. e. cor.....	High.....	Single.....	16	
471	Seventh and Ross, n. w. cor.....	High.....	Single.....	16	
472	Seventh and Earl, n. w. cor.....	High.....	Single.....	16	
473	Ross and Earl, n. w. cor.....	High.....	Single.....	6	
474	Edmund and Marion, n. e. cor.....	High.....	Single.....	6	
475	Fauquier and Cypress, n. e. cor.....	High.....	Single.....	6	
476	Fauquier and Earl, n. w. cor.....	High.....	Single.....	6	
477	Fauquier and Payne, s. w. cor.....	Low.....	Single.....	12	
478	Fauquier and Edgerton, s. e. cor.....	Low.....	Single.....	12	
479	Fauquier and Bradley, s. w. cor.....	Low.....	Single.....	12	
480	DeSoto and Fauquier, s. w. cor.....	Low.....	Single.....	12	



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
481	De Soto and Minnehaha, n. w. cor.....	Low .....	Single.....	12 .....	13 .....
482	Fifth, 350 ft. west of Maria.....	High.....	Single.....	6 .....	73 .....
483	Fauquier and Forrest, n. w. cor.....	High.....	Single.....	6 .....	55 .....
484	Fauquier and Mendota, n. e. cor.....	High.....	Single.....	6 .....	63 .....
485	Fauquier and Arcade, n. e. cor.....	High.....	Single.....	6 .....	61 .....
486	Lincoln, between Oakland and Dale.....	High.....	Single.....	6 .....	39 .....
487	Lincoln and Dale, n. e. cor.....	High.....	Single.....	6 .....	36 .....
488	Hoffman and Sixth, n. w. cor.....	High.....	Single.....	6 .....	83 .....
489	Mendota and Reaney, n. w. cor.....	High.....	Single.....	6 .....	59 .....
490	Ninth and Broadway, n. w. cor.....	Low .....	Single.....	6 .....	44 .....
491	Oneida and Seventh, s. w. cor.....	Low .....	Single.....	6 .....	30 .....
492	Franklin and Fifth, n. w. cor.....	Low .....	Single.....	4 .....	33 .....
493	Van Slyke P. and Olive, s. w. cor.....	Low .....	Single.....	4 .....	41 .....
494	Martin and Arundel, n. e. cor.....	High.....	Single.....	6 .....	48 .....
495	Lincoln and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	39 .....
496	Lincoln and Grotto, n. e. cor.....	High.....	Single.....	6 .....	33 .....
497	Lincoln and Avon, n. e. cor.....	High.....	Single.....	6 .....	33 .....
498	Fuller and Arundel, n. e. cor.....	High.....	Single.....	6 .....	46 .....
499	Fuller and Mackubin, n. e. cor.....	High.....	Single.....	6 .....	43 .....
500	Fuller and Kent, n. e. cor.....	High.....	Single.....	6 .....	40 .....
501	Goodhue and Ann, n. w. cor.....	Low .....	Single.....	6 .....	33 .....
502	Goodhue and Western, n. w. cor.....	Low .....	Single.....	6 .....	32 .....
503	Goodhue and Richmond, n. e. cor.....	Low .....	Single.....	6 .....	31 .....
504	Portland and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	35 .....
505	Aurora and Kent, n. e. cor.....	High.....	Single.....	6 .....	46 .....
506	Aurora and Mackubin, n. w. cor.....	High.....	Single.....	6 .....	44 .....
507	Aurora and Arundel, n. w. cor.....	High.....	Single.....	6 .....	50 .....
508	Holly and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	34 .....
509	Holly and Grotto, n. e. cor.....	High.....	Single.....	6 .....	32 .....
510	Holly and Avon, n. e. cor.....	High.....	Single.....	6 .....	30 .....
511	Martin and Ravoux, n. e. cor.....	High.....	Single.....	6 .....	60 .....
512	Martin and Summit Place, n. e. cor.....	High.....	Single.....	6 .....	60 .....
513	Central and St. Peter, n. w. cor.....	High.....	Single.....	4 .....	60 .....
514	Maria and Eighth, n. w. cor.....	High.....	Single.....	6 .....	66 .....
515	Bradley and Seventh, s. e. cor.....	Low .....	Single.....	6 .....	42 .....
516	Ashland and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	36 .....
517	Ashland and Grotto, n. e. cor.....	High.....	Single.....	6 .....	33 .....
518	Ashland and Avon, n. e. cor.....	High.....	Single.....	6 .....	34 .....
519	Goodrich and Dousman.....	Low .....	Single.....	12 .....	33 .....
520	Goodrich and Garfield, n. w. cor.....	Low .....	Single.....	12 .....	32 .....
521	Goodrich and Western, n. e. cor.....	Low .....	Single.....	12 .....	32 .....
522	Bichenwald and Sixth, n. w. cor.....	High.....	Single.....	6 .....	41 .....
523	Bichenwald and Seventh, s. w. cor.....	High.....	Single.....	6 .....	42 .....
524	Simon and Sixth, n. w. cor.....	High.....	Single.....	6 .....	36 .....
525	Hague and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	34 .....
526	Hague and Grotto, n. e. cor.....	High.....	Single.....	6 .....	32 .....
527	Hague and Avon, n. e. cor.....	High.....	Single.....	6 .....	31 .....
528	Hague and Fisk, n. e. cor.....	High.....	Single.....	6 .....	31 .....
529	Selby and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	33 .....
530	Reaney and Forrest, n. e. corner.....	High.....	Single.....	6 .....	51 .....
531	Reaney and Cypress, n. w. cor.....	High.....	Single.....	6 .....	56 .....
532	Reaney and Earl, n. w. cor.....	High.....	Single.....	6 .....	59 .....
533	Irvine Park, north side.....	Low .....	Single.....	4 .....	53 .....
534	Irvine Park, south side.....	Low .....	Single.....	4 .....	43 .....
535	Marshall and Victoria, n. e. cor.....	High.....	Single.....	12 .....	34 .....
536	Marshall and Fisk, n. e. cor.....	High.....	Single.....	12 .....	38 .....
537	Marshall and Avon, n. e. cor.....	High.....	Single.....	12 .....	32 .....
538	Marshall and Grotto, n. e. cor.....	High.....	Single.....	12 .....	34 .....
539	Earl and Minnehaha, n. w. cor.....	High.....	Single.....	12 .....	62 .....
540	Earl and Beech, n. w. cor.....	High.....	Single.....	12 .....	63 .....
541	Reaney and Frank, n. w. cor.....	High.....	Single.....	6 .....	56 .....
542	Laurel and Dale, n. w. cor.....	High.....	Single.....	6 .....	35 .....
543	Laurel and St. Albans, n. e. cor.....	High.....	Single.....	6 .....	35 .....
544	Laurel and Grotto, n. e. cor.....	High.....	Single.....	6 .....	30 .....
545	Laurel and Avon, n. e. cor.....	High.....	Single.....	6 .....	30 .....
546	Garfield and Harrison, s. w. cor.....	Low .....	Single.....	6 .....	35 .....
547	Banfil and Smith avenue, n. w. cor.....	Low .....	Single.....	4 .....	39 .....
548	Carroll and Dale, n. e. cor.....	High.....	Single.....	6 .....	26 .....
549	Fuller and Marion, n. e. cor.....	High.....	Single.....	6 .....	59 .....

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE 4'
550	Fuller and Jay, n. e. cor.	High	Single	6	
551	Fuller and Farrington, n. e. cor.	High	Single	6	
552	Fuller and Virginia, n. e. cor.	High	Single	6	
553	Summit Place and St. Anthony, n. w. cor.	High	Single	6	
554	Cedar and Viola, n. w. cor.	High	Single	6	
555	Cedar and Como, s. e. cor.	High	Single	6	
556	Viola and Jackson, n. w. cor.	High	Single	6	
557	Seventh and Frank, n. w. cor.	High	Single	16	
558	Seventh and Frank, n. e. cor.	High	Single	16	
559	Seventh and Duluth, n. w. cor.	High	Single	16	
560	Rice and Lafond, s. w. cor.	High	Single	12	
561	Rice and Arch.	High	Single	12	
562	Rice and Pennsylvania.	High	Single	12	
563	Rondo and Ravoux, n. w. cor.	High	Single	6	
564	Rondo and Summit Place, n. w. cor.	High	Single	6	
565	Williams and Olive, n. w. cor.	High	Single	6	
566	Olive and Pennsylvania, s. w. cor.	High	Single	6	
567	Rondo and Louis, n. w. cor.	High	Single	6	
568	Rondo and Farrington, n. e. cor.	High	Single	6	
569	Ninth and Smith avenue, n. e. cor.	Low	Single	6	
570	Franklin and Sixth, n. w. cor.	Low	Single	4	
571	Rondo and Virginia, n. e. cor.	High	Single	6	
572	Mendota and Beech, n. w. cor.	High	Single	12	
573	Kittson and Fourth, n. w. cor.	Low	Single	6	
574	Valley and Warren, n. e. cor.	High	Single	16	
575	Fairview and Valley, n. w. cor.	High	Single	6	
576	Mendota and Dawson, n. w. cor.	High	Single	12	
577	Mendota and Francis, n. w. cor.	High	Single	12	
578	Mendota and Fourth, n. w. cor.	High	Single	12	
579	Mt. Airy and Broadway, n. w. cor.	High	Single	6	
580	Fourth and Neill, n. e. cor.	Low	Single	12	
581	Fourth and Willis, n. e. cor.	Low	Single	12	
582	Fourth and Locust, n. e. cor.	Low	Single	12	
583	Mendota and Fremont, n. w. cor.	High	Single	12	
584	Mendota and Conway, n. w. cor.	High	Single	12	
585	Euclid and Forrest, n. e. cor.	High	Single	6	
586	Euclid and Mendota, n. e. cor.	High	Single	6	
587	Third and Cypress, n. w. cor.	High	Single	6	
588	Third and Forrest, n. e. cor.	High	Single	6	
589	Third and Mendota, n. e. cor.	High	Single	6	
590	Third and Arcade, n. e. cor.	High	Single	6	
591	Hudson and Mendota, n. w. cor.	High	Single	12	
592	Mt. Airy and Linden, n. w. cor.	High	Single	6	
593	Mt. Airy and Warren, n. e. cor.	High	Single	6	
594	Maple and Euclid, n. w. cor.	High	Single	6	
595	Mt. Airy and Fairview, n. e. cor.	High	Single	6	
596	Webster and Palace, s. w. cor.	Low	Single	6	
597	Maple and Ravine, s. w. cor.	High	Single	6	
598	Fourth and Broadway, n. e. cor.	Low	Single	12	
599	Maple and Conway, n. w. cor.	High	Single	6	
600	Viola and Brewster, n. w. cor.	High	Single	6	
601	Maple and Fourth, n. w. cor.	High	Single	6	
602	Viola and Park, n. w. cor.	High	Single	6	
603	Maple and Sixth, n. w. cor.	High	Single	6	
604	Margaret and Arcade, n. w. cor.	High	Single	6	
605	Margaret and Mendota, n. w. cor.	High	Single	6	
606	Sherburne and Marion, n. e. cor.	High	Single	6	
607	Granite and Courtland, n. e. cor.	High	Single	6	
608	Granite and Agate, n. e. cor.	High	Single	6	
609	Granite and Beaver, n. e. cor.	High	Single	6	
610	Margaret and Forrest, n. w. cor.	High	Single	6	
611	Sherburne and Gaultier, n. w. cor.	High	Single	6	
612	Sherburne and Farrington, n. e. cor.	High	Single	6	
613	Sherburne and Virginia, n. w. cor.	High	Single	6	
614	Margaret and Cypress, n. w. cor.	High	Single	6	
615	Margaret and Earl, n. w. cor.	High	Single	6	
616	Mississippi and Case, s. w. cor.	Low	Single	6	
617	Mississippi and Jenks, n. w. cor.	Low	Single	6	
618	Mississippi and Lawson, s. w. cor.	Low	Single	6	



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STREAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
619	Mississippi and Cook, s. w. cor.	Low	Single	6	24
620	Mississippi and Magnolia, s. w. cor.	Low	Single	6	20
621	Mississippi and Jessamine, s. w. cor.	Low	Single	6	20
622	Robert and Thirteenth, s. e. cor.	Low	Single	6	29
623	Capitol and Buffalo, n. e. cor.	High	Single	6	64
624	Capitol and Elk, n. e. cor.	High	Single	6	67
625	Capitol and Cortland, n. e. cor.	High	Single	6	68
626	University and Mackubin, n. e. cor.	High	Single	12	51
627	University and Kent, n. e. cor.	High	Single	12	48
628	University and Dale, n. e. cor.	High	Single	12	45
629	Central ave., north of Central Park	High	Single	6	73
630	Central Drive East and Summit ave., n. e. cor.	High	Single	4	84
631	Genessee and Buffalo, n. e. cor.	High	Single	6	65
632	Sherburne and Western, n. w. cor.	High	Single	6	58
633	Sherburne and Arundel, n. w. cor.	High	Single	6	57
634	Sherburne and Mackubin, n. w. cor.	High	Single	6	53
635	Sherburne and Kent, n. w. cor.	High	Single	6	49
636	Aurora and Virginia, n. w. cor.	High	Single	6	56
637	Fourteenth and Robert, n. e. cor.	Low	Single	6	30
638	Payne and Minnehaha, n. w. cor.	Low	Single	6	21
639	Reaney and Payne, n. w. cor.	Low	Single	6	17
640	Reaney and Edgerton, n. e. cor.	Low	Single	6	14
641	Eagle and Spring, n. e. cor.	Low	Single	6	68
642	Charles and Marion, n. e. cor.	High	Single	6	58
643	Charles and Gaultier, n. e. cor.	High	Single	6	57
644	Charles and Elftel, n. w. cor.	High	Single	6	56
645	Charles and Farrington, n. e. cor.	High	Single	6	56
646	Charles and Virginia, n. e. cor.	High	Single	6	56
647	Charles and Western, n. e. cor.	High	Single	6	57
648	Virginia and Marshall, n. w. cor.	High	Single	4	31
649	Decatur and Bedford, n. e. cor.	Low	Single	6	27
650	Decatur and Edgerton, n. w. cor.	Low	Single	6	43
651	Beaumont and Preble, n. w. cor.	Low	Single	6	27
652	Oakland and Lincoln, s. w. cor.	High	Single	6	47
653	Oakland and Floral	High	Single	6	54
654	Oakland and Lawton, n. w. cor.	High	Single	6	65
655	Oakland and Western, n. w. cor.	High	Single	6	81
656	Wabasha and Levee	Low	Single	6	64
657	Wabasha and Fillmore, s. w. cor.	Low	Single	6	67
658	Wabasha and Fairfield, s. w. cor.	Low	Single	6	68
659	Wabasha and Indiana, s. w. cor.	Low	Single	6	69
660	Wabasha and Chicago, s. w. cor.	Low	Single	6	68
661	Wabasha and Channel, n. w. cor.	Low	Single	6	67
662	Toronto and Seventh, s. w. cor.	Low	Single	6	34
663	James and Seventh, n. e. cor.	Low	Single	6	34
664	Randolph and Seventh, n. e. cor.	Low	Single	6	33
665	Warsaw and Seventh, n. w. cor.	Low	Single	6	32
666	Audubon and Seventh, n. e. cor.	Low	Single	6	32
667	Summit and St. Albans, n. e. cor.	High	Single	12	36
668	Carroll and Victoria, n. w. cor.	High	Single	6	45
669	Carroll and Milton, n. w. cor.	High	Single	6	39
670	Western and St. Clair, n. w. cor.	Low	Single	6	37
671	Armstrong and Seventh, n. e. cor.	Low	Single	6	33
672	Bay and Seventh, s. w. cor.	Low	Single	6	32
673	Lee and Summit, n. e. cor.	Low	Single	6	33
674	Jefferson and Oneida, n. e. cor.	Low	Single	12	35
675	Jefferson and Webster, n. e. cor.	Low	Single	12	34
676	Webster, 300 feet north of Jefferson	Low	Single	6	30
677	Maria and Plum, n. w. cor.	High	Single	6	73
678	Maria and Cherry, n. w. cor.	High	Single	6	72
679	Robert, 200 feet north of University	High	Single	6	67
680	Grotto and Summit, n. w. cor.	High	Single	6	32
681	Grotto and Portland, n. w. cor.	High	Single	6	31
682	Hoffman and Cherry, s. w. cor.	High	Single	6	77
683	Minnesota and Seventh, s. e. cor.	Low	Single	6	44
684	Dayton and Victoria, n. w. cor.	High	Single	6	32
685	Minnesota and Fourth, s. e. cor.	Low	Double	6	45
686	Selby and Grotto, n. w. cor.	High	Single	6	33
687	Selby and Avon, n. e. cor.	High	Single	6	31



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE	PRESSURE AT HYDRANT.
688	Selby and Fisk, n. e. cor.....	High.....	Single.....	6	32
689	Selby and Victoria, n. e. cor.....	High.....	Single.....	6	31
690	Hoffman and McLean.....	High.....	Single.....	6	76
691	Hoffman and Lizzie.....	High.....	Single.....	6	74
692	Hoffman and River.....	High.....	Single.....	6	73
693	Portland and Avon, n. e. cor.....	High.....	Single.....	6	29
694	Margaret and Hope, n. w. cor.....	High.....	Single.....	6	43
695	Margaret and Greenbrier, n. e. cor.....	High.....	Single.....	6	46
696	Hoffman and Clermont.....	High.....	Single.....	6	72
697	Cherry, 200 feet south of Hoffman.....	High.....	Single.....	4	89
698	Ramsey and Western, n. e. cor.....	High.....	Single.....	6	55
699	Oakland and Ramsey, n. w. cor.....	High.....	Single.....	6	86
700	Fourth and Hope, n. w. cor.....	High.....	Single.....	6	44
701	Western and Milwaukee Short Line.....	Low.....	Single.....	6	41
702	Goodrich, 750 feet east of Dale.....	High.....	Single.....	6	37
703	Dale and Goodrich, n. w. cor.....	High.....	Single.....	12	37
704	Goodrich and Richmond.....	Low.....	Single.....	6	35
705	Ninth and Olive, s. w. cor.....	Low.....	Single.....	6	45
706	Ninth and Neill, s. w. cor.....	Low.....	Single.....	4	43
707	Sixth and Hope, n. e. cor.....	High.....	Single.....	6	40
708	Martin and Kent, n. e. cor.....	High.....	Single.....	6	44
709	Jackson and Valley, s. e. cor.....	High.....	Single.....	6	48
710	Martin and Mackubin, n. e. cor.....	High.....	Single.....	6	40
711	Greenbrier and North, n. w. cor.....	High.....	Single.....	12	53
712	Greenbrier and Maury, s. w. cor.....	High.....	Single.....	12	49
713	Sherburne and Park, n. w. cor.....	High.....	Single.....	6	51
714	Third and Jackson, n. w. cor.....	Low.....	Double.....	6	53
715	St. Anthony and Dale, n. e. cor.....	High.....	Single.....	6	30
716	St. Anthony and Kent, n. e. cor.....	High.....	Single.....	6	39
717	Arcade and Minnehaha, s. w. cor.....	High.....	Single.....	12	53
718	St. Anthony and Mackubin, n. e. cor.....	High.....	Single.....	6	44
719	St. Anthony and Arundel, n. e. cor.....	High.....	Single.....	6	46
720	St. Anthony and Virginia, n. w. cor.....	High.....	Single.....	6	53
721	St. Anthony and Farrington, n. w. cor.....	High.....	Single.....	6	57
722	Wabasha and Park, s. e. cor.....	High.....	Single.....	4	59
723	St. Anthony and Jay, n. w. cor.....	High.....	Single.....	6	61
724	St. Anthony and Louis, n. w. cor.....	High.....	Single.....	6	60
725	St. Anthony and Ravoux.....	High.....	Single.....	6	61
726	Sherburne and Brewster, n. w. cor.....	High.....	Single.....	6	42
727	Brewster and University, n. w. cor.....	High.....	Single.....	6	48
728	Harrison and Western, n. e. cor.....	Low.....	Single.....	6	33
729	Martin and Virginia, n. w. cor.....	High.....	Single.....	6	54
730	Martin and Farrington, n. w. cor.....	High.....	Single.....	6	57
731	Pennsylvania and L'Orient, n. e. cor.....	Low.....	Single.....	6	33
732	Martin and Jay, n. w. cor.....	High.....	Single.....	6	59
733	Martin and Louis, n. e. cor.....	High.....	Single.....	6	59
734	Glencoe and L'Orient, n. e. cor.....	Low.....	Single.....	6	31
735	Glencoe and Columbia, n. e. cor.....	Low.....	Single.....	6	27
736	Arcade and Wells, n. w. cor.....	High.....	Single.....	12	56
737	Arcade and York, n. w. cor.....	High.....	Single.....	12	50
738	Arcade and Sims, n. w. cor.....	High.....	Single.....	12	46
739	Arcade and Case, n. w. cor.....	High.....	Single.....	12	48
740	Arcade and Jenks, s. w. cor.....	High.....	Single.....	12	46
741	Arcade and Lawson, s. w. cor.....	High.....	Single.....	12	45
742	Arcade and Cook, s. w. cor.....	High.....	Single.....	12	42
743	Arcade and Magnolia, s. w. cor.....	High.....	Single.....	12	43
744	Arcade, in front of Bohn Mfg Co.....	High.....	Single.....	12	60
745	Fauquier and Weide, n. e. cor.....	High.....	Single.....	6	58
746	Reaney and Weide, n. e. cor.....	High.....	Single.....	6	62
747	Reaney and Arcade, n. e. cor.....	High.....	Single.....	6	56
748	Edmund and Gaultier, n. e. cor.....	High.....	Single.....	6	57
749	Edmund and Elfelt, n. e. cor.....	High.....	Single.....	6	56
750	Edmund and Farrington, n. e. cor.....	High.....	Single.....	6	55
751	Edmund and Virginia, n. e. cor.....	High.....	Single.....	6	55
752	Edmund and Western, n. e. cor.....	High.....	Single.....	6	56
753	Como and Thomas, s. e. cor.....	High.....	Single.....	20	56
754	Como and Claghorn, s. e. cor.....	High.....	Single.....	20	58
755	Como and Lafond, s. e. cor.....	High.....	Single.....	20	59
756	Como and Gaultier, s. e. cor.....	High.....	Single.....	20	61

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
757	Aurora and Marion, n. e. cor.....	High.....	Single.....	6.....	59
758	Aurora and Jay, n. e. cor.....	High.....	Single.....	6.....	57
759	Aurora and Farrington, n. e. cor.....	High.....	Single.....	6.....	59
760	Preble and Minnehaha, s. w. cor.....	Low.....	Single.....	6.....	20
761	Payne and Beaumont.....	Low.....	Single.....	6.....	27
762	Thomas and Arundel, n. e. cor.....	High.....	Single.....	6.....	58
763	Thomas and Mackubin, n. e. cor.....	High.....	Single.....	6.....	57
764	Conway and Arcade, n. e. cor.....	High.....	Single.....	6.....	49
765	Conway and Forrest, n. e. cor.....	High.....	Single.....	6.....	51
766	Thomas and Kent, n. e. cor.....	High.....	Single.....	6.....	52
767	Thomas and Dale, n. e. cor.....	High.....	Single.....	6.....	47
768	Francis and Arcade, n. e. cor.....	High.....	Single.....	6.....	45
769	River and Maria, s. w. cor.....	High.....	Single.....	4.....	68
770	Duke and Jefferson, s. w. cor.....	Low.....	Single.....	6.....	37
771	Duke and Cascade, n. w. cor.....	Low.....	Single.....	6.....	44
772	Blair and Arundel, n. e. cor.....	High.....	Single.....	6.....	56
773	Blair and Mackubin, n. e. cor.....	High.....	Single.....	6.....	57
774	Blair and Kent, n. e. cor.....	High.....	Single.....	6.....	55
775	Blair and Dale, n. e. cor.....	High.....	Single.....	6.....	52
776	Iglehart and Dale, n. e. cor.....	High.....	Single.....	6.....	30
777	Fairfield and Starkey, n. e. cor.....	Low.....	Single.....	6.....	69
778	Fairfield and Custer, n. e. cor.....	Low.....	Single.....	6.....	68
779	Jackson and Winter.....	High.....	Single.....	12.....	53
780	Jackson and Arch, s. e. cor.....	High.....	Single.....	12.....	56
781	Jackson and Pennsylvania, s. e. cor.....	High.....	Single.....	12.....	60
782	Fairfield and Hubert, n. e. cor.....	Low.....	Single.....	6.....	67
783	Fairfield and Robert, n. w. cor.....	Low.....	Single.....	6.....	65
784	Fairfield and Eaton, n. e. cor.....	Low.....	Single.....	6.....	66
785	Fairfield and Eva, n. e. cor.....	Low.....	Single.....	6.....	67
786	Fairfield and Robertson, n. w. cor.....	Low.....	Single.....	6.....	68
787	Fairfield and State, n. w. cor.....	Low.....	Single.....	6.....	69
788	Como and Ellet, s. e. cor.....	High.....	Single.....	20.....	60
789	Como and Van Buren, s. w. cor.....	High.....	Single.....	20.....	61
790	Como and Minnehaha, s. w. cor.....	High.....	Single.....	20.....	59
791	Como and Virginia, s. w. cor.....	High.....	Single.....	20.....	54
792	Como and Western, s. e. cor.....	High.....	Single.....	20.....	51
793	Indiana, between Wabasha and Starkey.....	Low.....	Single.....	12.....	69
794	Front and Dale, n. e. cor.....	High.....	Single.....	12.....	41
795	Front and Kent, n. w. cor.....	High.....	Single.....	12.....	51
796	Front and Mackubin, n. w. cor.....	High.....	Single.....	12.....	58
797	Front and Arundel, n. w. cor.....	High.....	Single.....	12.....	53
798	Front and Western, n. w. cor.....	High.....	Single.....	12.....	45
799	Randolph and Bay, n. e. cor.....	Low.....	Single.....	12.....	31
800	Randolph and View, n. e. cor.....	Low.....	Single.....	12.....	30
801	Front and Hand, n. w. cor.....	High.....	Single.....	12.....	42
802	Front and Farrington, n. w. cor.....	High.....	Single.....	12.....	44
803	Front and Matilda, n. w. cor.....	High.....	Single.....	12.....	47
804	Front and Gaultier, n. w. cor.....	High.....	Single.....	12.....	52
805	Pillmore and State, n. w. cor.....	Low.....	Single.....	6.....	69
806	Front and Marion, n. w. cor.....	High.....	Single.....	12.....	59
807	Front and Woodbridge, n. w. cor.....	High.....	Single.....	12.....	60
808	Front and Albemarle, n. w. cor.....	High.....	Single.....	12.....	60
809	Front and Rice, n. w. cor.....	High.....	Single.....	12.....	60
810	Lincoln and Victoria, n. e. cor.....	High.....	Single.....	6.....	31
811	Lincoln and Milton, n. w. cor.....	High.....	Single.....	6.....	34
812	Grand and Milton, n. w. cor.....	High.....	Single.....	6.....	33
813	Hague and Victoria, n. e. cor.....	High.....	Single.....	6.....	32
814	Dousman and Yankee, n. w. cor.....	Low.....	Single.....	6.....	38
815	Indiana and State, n. w. cor.....	Low.....	Single.....	16.....	69
816	Indiana and Robertson, n. w. cor.....	Low.....	Single.....	16.....	68
817	Indiana and Eva, n. w. cor.....	Low.....	Single.....	16.....	68
818	Eaton and Indiana, s. w. cor.....	Low.....	Single.....	16.....	68
819	Indiana and Robert, n. e. cor.....	Low.....	Single.....	16.....	68
820	Indiana and Hubert, n. e. cor.....	Low.....	Single.....	16.....	68
821	Indiana and Custer, n. e. cor.....	Low.....	Single.....	16.....	68
822	Indiana and Starkey, n. e. cor.....	Low.....	Single.....	16.....	69
823	Milwaukee Freight Yard.....	Low.....	Single.....	16.....	69
824	Summit and Minnesota, s. w. cor.....	Low.....	Single.....	6.....	27
825	Wabasha and Wood.....	Low.....	Single.....	6.....	64



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
826	Wabasha and Colorado, n. w. cor.	Low	Single	6	57
827	Wabasha and Delos, s. w. cor.	Low	Single	6	55
828	Isabel and State, n. w. cor.	Low	Single	12	53
829	Isabel and Greenwood, n. w. cor.	Low	Single	12	49
830	Isabel and Clinton, n. w. cor.	Low	Single	12	52
831	Isabel and Robert, n. w. cor.	Low	Single	12	54
832	Isabel and Livingston, n. w. cor.	Low	Single	12	54
833	Isabel and Starkey, n. w. cor.	Low	Single	12	49
834	Isabel and Wabasha, n. w. cor.	Low	Single	12	46
835	Isabel and Goff, n. w. cor.	Low	Single	12	46
836	Isabel and Hall, n. w. cor.	Low	Single	12	42
837	Isabel and Stryker, n. w. cor.	Low	Single	12	42
838	Isabel and Winslow, n. w. cor.	Low	Single	12	41
839	Concord and Bancroft, n. w. cor.	Low	Single	12	54
840	Concord and Anita, n. e. cor.	Low	Single	12	53
841	Concord and Ada, n. e. cor.	Low	Single	12	50
842	Concord and State, n. e. cor.	Low	Single	12	49
843	Concord and Robie, s. w. cor.	Low	Single	12	50
844	Concord and Winnifred, s. w. cor.	Low	Single	12	53
845	Concord and Congress, s. w. cor.	Low	Single	12	54
846	Concord and Omega, s. w. cor.	Low	Single	12	56
847	John and Williams, s. w. cor.	Low	Single	6	35
848	Western and Superior, s. w. cor.	Low	Single	6	34
849	Robert and Fillmore, n. w. cor.	Low	Single	6	61
850	Congress and Robert, n. w. cor.	Low	Single	6	54
851	Congress and Clinton, n. w. cor.	Low	Single	6	52
852	Congress and Greenwood, n. w. cor.	Low	Single	6	50
853	Congress and State, n. w. cor.	Low	Single	6	50
854	Minnehaha and Edgerton, n. w. cor.	Low	Single	6	19
855	Robie and State, n. e. cor.	Low	Single	6	52
856	Robie and Ada, n. e. cor.	Low	Single	6	53
857	Robie and Anita, n. e. cor.	Low	Single	6	56
858	Robie and Bancroft, n. w. cor.	Low	Single	6	58
859	Winnifred and State, n. e. cor.	Low	Single	6	51
860	Winnifred and Ada, n. e. cor.	Low	Single	6	52
861	Winnifred and Anita, n. e. cor.	Low	Single	6	51
862	Winnifred and Bancroft, n. w. cor.	Low	Single	6	52
863	Congress and State, n. e. cor.	Low	Single	6	50
864	Congress and Ada, n. e. cor.	Low	Single	6	50
865	Congress and Anita, n. e. cor.	Low	Single	6	50
866	Congress and Dunedin Terrace, n. e. cor.	Low	Single	6	50
867	Congress and Bancroft, n. w. cor.	Low	Single	6	50
868	Hoffman and Short, s. w. cor.	High	Single	6	76
869	Sixth and Washington, s. e. cor.	Low	Single	6	33
870	Lee and Drake, n. w. cor.	Low	Single	6	43
871	Lee and Warsaw, n. w. cor.	Low	Single	6	39
872	Lee and Bay, n. e. cor.	Low	Single	6	35
873	Western and Banfil, n. w. cor.	Low	Single	6	31
874	Von Minden and Dousman, n. w. cor.	Low	Single	6	35
875	Von Minden and Ann, n. w. cor.	Low	Single	6	34
876	Minnehaha and Bradley, n. e. cor.	Low	Single	6	17
877	Fillmore and Starkey, n. w. cor.	Low	Single	6	68
878	Brewster and Como, s. w. cor.	High	Single	6	41
879	Mt. Airy and L'Orient, n. w. cor.	High	Single	6	80
880	Sherburne and Dale, n. e. cor.	High	Single	6	46
881	Fillmore and Custer, n. w. cor.	Low	Single	6	66
882	Fillmore and Hubert, n. w. cor.	Low	Single	6	63
883	Fillmore and Eaton, n. e. cor.	Low	Single	6	65
884	Fillmore and Eva, n. w. cor.	Low	Single	6	65
885	Fillmore and Robertson, n. w. cor.	Low	Single	6	67
886	Woodward and Burr, n. e. cor.	Low	Single	4	44
887	Wabasha and Congress, n. w. cor.	Low	Single	6	46
888	Wabasha and Goff, n. w. cor.	Low	Single	6	41
889	Congress and Omega, n. w. cor.	Low	Single	6	49
890	Reaney and Walsh, n. e. cor.	High	Single	6	70
891	Reaney and Greenbrier, n. e. cor.	High	Single	6	72
892	Euclid and Cypress, n. e. cor.	High	Single	6	48
893	Euclid and Earl, n. w. cor.	High	Single	6	43
894	Livingston and Wood, s. w. cor.	Low	Single	6	57

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
895	Colorado and Parnell, n. e. cor.	Low	Single	6	53
896	Colorado and Livingston, n. e. cor.	Low	Single	6	53
897	Colorado and S. Robert, n. e. cor.	Low	Single	6	54
898	Colorado and Clinton, n. e. cor.	Low	Single	6	55
899	S. Robert and Wood, s. w. cor.	Low	Single	6	57
900	Carroll and St. Albans, n. e. cor.	High	Single	6	36
901	Carroll and Grotto, n. e. cor.	High	Single	6	35
902	Carroll and Miller, n. e. cor.	High	Single	6	38
903	Carroll and Fisk, n. e. cor.	High	Single	6	43
904	Concord and Brown, n. w. cor.	Low	Single	12	57
905	Concord and Andrew, n. w. cor.	Low	Single	12	60
906	Iglehart and St. Albans, n. e. cor.	High	Single	6	36
907	Iglehart and Grotto, n. e. cor.	High	Single	6	33
908	Iglehart and Avon, n. e. cor.	High	Single	6	36
909	Iglehart and Fisk, n. e. cor.	High	Single	6	40
910	Iglehart and Victoria, n. e. cor.	High	Single	6	39
911	Winnifred and Clinton, n. w. cor.	Low	Single	6	52
912	Winnifred and Greenwood, n. w. cor.	Low	Single	6	51
913	Lafayette and Woodward, n. w. cor.	Low	Single	16	39
914	Isabel and Bidwell, n. w. cor.	Low	Single	12	22
915	Isabel and Bellows, n. w. cor.	Low	Single	12	21
916	Summit and Avon, n. e. cor.	High	Single	12	30
917	Summit and Victoria, n. e. cor.	High	Single	12	31
918	Winnifred and Brown, n. w. cor.	Low	Single	6	50
919	Winnifred and Andrew, n. w. cor.	Low	Single	6	58
920	Ross and Frank, n. w. cor.	High	Single	6	61
921	Ross and Duluth, n. e. cor.	High	Single	6	59
922	Ross and Atlantic, n. w. cor.	High	Single	6	55
923	Summit and Milton, n. e. cor.	High	Single	12	34
924	Summit and Chatsworth, n. e. cor.	High	Single	12	33
925	Delos and Greenwood, n. w. cor.	Low	Single	6	49
926	Delos and Clinton, n. e. cor.	Low	Single	6	51
927	Delos and South Robert, n. e. cor.	Low	Single	6	52
928	Western and Sturges.	Low	Single	6	34
929	Summit and Oxford, n. e. cor.	High	Single	12	32
930	Summit and Lexington, n. e. cor.	High	Single	12	33
931	Beech and Frank, n. w. cor.	High	Single	6	50
932	Beech and Duluth, n. w. cor.	High	Single	6	51
933	Delos and Starkey, n. e. cor.	Low	Single	6	57
934	Delos and Livingston, n. e. cor.	Low	Single	6	54
935	Jackson and Fifth, n. e. cor.	Low	Double	12	47
936	Jackson and Sixth, s. e. cor.	Low	Double	12	46
937	Jackson and Seventh, s. e. cor.	Low	Double	12	45
938	Jackson and Eighth, s. e. cor.	Low	Double	12	44
939	Jackson and Ninth, s. e. cor.	Low	Single	12	39
940	Summit and Dunlap.	High	Single	12	29
941	Summit and Briggs.	High	Single	12	29
942	Summit and Milwaukee Ry.	High	Single	12	29
943	Beech and Forrest, n. w. cor.	High	Single	6	52
944	South Robert and Chicago, n. w. cor.	Low	Single	6	69
945	South Robert and Plato, n. w. cor.	Low	Single	6	70
946	South Robert, 250 ft. south of Plato.	Low	Single	6	70
947	South Robert and Morrison.	Low	Single	6	64
948	South Robert and railroad bridge.	Low	Single	6	59
949	Marion and Thomas, s. w. cor.	High	Single	6	58
950	Marion and Lafond, s. w. cor.	High	Single	6	59
951	State and Chicago, n. w. cor.	Low	Single	16	69
952	State and Plato, n. w. cor.	Low	Single	16	69
953	State and Florida, n. w. cor.	Low	Single	16	69
954	State and Utah.	Low	Single	16	68
955	Van Buren and Western, n. w. cor.	High	Single	6	58
956	Van Buren and Arundel, n. e. cor.	High	Single	6	57
957	Isabel and Charlton, n. e. cor.	Low	Single	6	29
958	West Seventh and Ramsey, p. e. cor.	Low	Double	20	36
959	West Seventh and Walnut, n. e. cor.	Low	Double	20	41
960	West Seventh and Chestnut, s. e. cor.	Low	Double	20	38
961	Lafond and Western, n. w. cor.	High	Single	6	56
962	Lafond and Arundel, n. w. cor.	High	Single	6	57
963	Lafond and Mackubin, n. e. cor.	High	Single	6	57



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT
964	Randolph and Fulton, n. e. cor.	Low	Single	12	
965	Randolph and Clifton, n. e. cor.	Low	Single	12	
966	Randolph and Victoria, n. w. cor.	Low	Single	12	
967	Randolph and Milton, n. e. cor.	Low	Single	12	
968	Lafond and Kent, n. e. cor.	High	Single	6	
969	Lafond and Dale, n. e. cor.	High	Single	6	
970	Eagle and West Seventh, s. w. cor.	Low	Double	6	
971	Edmund and Arundel, n. w. cor.	High	Single	6	
972	Edmund and Mackubin, n. e. cor.	High	Single	6	
973	Edmund and Kent, n. e. cor.	High	Single	6	
974	Edmund and Dale, n. e. cor.	High	Single	6	
975	Case and Forrest, n. w. cor.	High	Single	12	
976	Case and Mendota, n. w. cor.	High	Single	12	
977	Colbourne and St. Clair, n. w. cor.	Low	Single	6	
978	Case and Weide, n. w. cor.	High	Single	12	
979	Case and Walsh, n. w. cor.	High	Single	12	
980	Aurora and Dale, n. w. cor.	High	Single	6	
981	Fuller and Dale, n. w. cor.	High	Single	6	
982	Rondo and Dale, n. e. cor.	High	Single	6	
983	Payne and Case, n. w. cor.	High	Single	6	
984	Payne and Jenks, n. w. cor.	High	Single	6	
985	Payne and Lawson, n. w. cor.	High	Single	6	
986	Cook and Payne, n. e. cor.	High	Single	6	
987	Case and Greenbrier, n. w. cor.	High	Single	12	
988	Case and Edgerton, n. e. cor.	High	Single	12	
989	Martin and Dale, n. e. cor.	High	Single	6	
990	Colbourne and Superior, s. w. cor.	Low	Single	6	
991	Colbourne and Michigan, s. w. cor.	Low	Single	6	
992	Case and Jessie, n. e. cor.	High	Single	12	
993	Case and Bradley, n. e. cor.	High	Single	12	
994	Case and Burr, n. e. cor.	High	Single	12	
995	Case and DeSoto, n. w. cor.	High	Single	12	
996	Case and Arkwright, n. w. cor.	High	Single	12	
997	Case and McMenemy, n. e. cor.	High	Single	12	
998	Burr and Jenks, s. w. cor.	High	Single	6	
999	Burr and York, n. w. cor.	High	Single	6	
1000	Burr and Whittall, n. w. cor.	High	Single	6	
1001	Burr and Omaha Ry, n. w. cor.	High	Single	6	
1002	Charles and Mackubin, n. w. cor.	High	Single	6	
1003	Charles and Kent, n. w. cor.	High	Single	6	
1004	Charles and Dale, n. e. cor.	High	Single	6	
1005	Charles and St. Albans, n. e. cor.	High	Single	6	
1006	Edmund and St. Albans, n. e. cor.	High	Single	6	
1007	Edmund and Grotto, n. e. cor.	High	Single	6	
1008	Lafond and St. Albans, n. e. cor.	High	Single	6	
1009	Lafond and Grotto, n. e. cor.	High	Single	6	
1010	Van Buren and Dale, n. w. cor.	High	Single	6	
1011	Minnehaha and Dale, n. w. cor.	High	Single	6	
1012	Payne and Omaha Ry	High	Single	6	
1013	Payne and Ross, n. w. cor.	High	Single	6	
1014	Payne and Whittall, n. w. cor.	High	Single	6	
1015	Payne and Wells, n. w. cor.	High	Single	6	
1016	York and Edgerton, n. e. cor.	High	Single	6	
1017	York and Payne, n. w. cor.	High	Single	6	
1018	York and Greenbrier, n. w. cor.	High	Single	6	
1019	Sims and Greenbrier, n. w. cor.	High	Single	6	
1020	Sims and Payne, n. e. cor.	High	Single	6	
1021	Tuscarora and W. Seventh, n. e. cor.	Low	Single	6	
1022	Sims and Weide, n. w. cor.	High	Single	6	
1023	Sims and Walsh, n. w. cor.	High	Single	6	
1024	York and Weide, n. w. cor.	High	Single	6	
1025	York and Walsh, n. w. cor.	High	Single	6	
1026	University and St. Albans, n. e. cor.	High	Single	20	
1027	University and Grotto, n. e. cor.	High	Single	20	
1028	University and Avon, n. e. cor.	High	Single	20	
1029	University and Victoria, n. e. cor.	High	Single	20	
1030	York and Mendota, n. w. cor.	High	Single	6	
1031	York and Forrest, n. w. cor.	High	Single	6	
1032	Forrest and Wells, n. w. cor.	High	Single	6	

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1033	Forrest and Sims, n. w. cor.	High	Single	6	51
1034	Beech and Cypress, n. w. cor.	High	Single	6	56
1035	University and Milton, n. e. cor.	High	Single	20	47
1036	University and Chatsworth, n. e. cor.	High	Single	20	57
1037	University and Oxford, n. e. cor.	High	Single	20	50
1038	University and Lexington, n. e. cor.	High	Single	20	45
1039	Park ave. and Aurora, n. w. cor.	High	Single	6	59
1040	Daly and James, n. w. cor.	Low	Single	6	34
1041	Daly and Palace, s. w. cor.	Low	Single	6	32
1042	Daly and Jefferson, s. w. cor.	Low	Single	6	32
1043	Third and Pine	Low	Double	12	68
1044	Third and Olive	Low	Double	12	69
1045	Third and John	Low	Double	12	69
1046	Laurel and Fisk, n. w. cor.	High	Single	6	31
1047	Summit Court	High	Single	6	34
1048	Third and Broadway, n. w. cor.	Low	Double	12	67
1049	Third and Wacouta, n. e. cor.	Low	Double	12	64
1050	Sibley and Third, n. e. cor.	Low	Double	12	62
1051	Goodrich and St. Albans, n. e. cor.	High	Single	6	40
1052	Goodrich and Grotto, n. e. cor.	High	Single	6	35
1053	Goodrich and Avon, n. e. cor.	High	Single	6	33
1054	Goodrich and Victoria, n. e. cor.	High	Single	6	32
1055	State and Morrison, s. w. cor.	Low	Single	16	67
1056	State and Champlain, s. w. cor.	Low	Single	16	67
1057	State and Baton, s. w. cor.	Low	Single	16	63
1058	State and Delos, s. w. cor.	Low	Single	16	57
1059	Mound and Hastings, s. w. cor.	High	Single	12	62
1060	Mound, 300 ft. south of Hastings	High	Single	12	56
1061	Mound and McLean, s. w. cor.	High	Single	12	49
1062	Mound and Lizzie, n. w. cor.	High	Single	12	45
1063	Garfield and Lisbon, n. w. cor.	Low	Single	6	34
1064	Fairmount and Dale, n. w. cor.	High	Single	12	37
1065	Kenwood Park, north side	High	Single	6	31
1066	Kenwood Park, south side	High	Single	6	30
1067	Pine and Pennsylvania, s. w. cor.	High	Single	6	54
1068	Fairmount and St. Albans, n. w. cor.	High	Single	6	45
1069	Fairmount and Grotto, n. e. cor.	High	Single	6	37
1070	Seventh and Wabasha, n. e. cor.	Low	Double	16	36
1071	Seventh and Cedar, n. e. cor.	Low	Double	16	42
1072	Seventh and Minnesota, n. e. cor.	Low	Double	16	44
1073	Seventh and Robert, n. e. cor.	Low	Double	16	45
1074	University and Griggs, n. e. cor.	High	Single	20	36
1075	University and Hamline, n. e. cor.	High	Single	20	30
1076	University and Pascal, n. e. cor.	High	Single	20	32
1077	University and Snelling, n. e. cor.	High	Single	20	33
1078	University and Aldine, n. e. cor.	High	Single	20	36
1079	University and Wheeler, n. e. cor.	High	Single	20	39
1080	Fairview and University, n. w. cor.	High	Single	20	41
1081	University and Prior, n. e. cor.	High	Single	20	40
1082	Laura and University, s. w. cor.	High	Single	6	42
1083	Laura and Waltham, n. w. cor.	High	Single	6	34
1084	Peronia and Laura, n. w. cor.	High	Single	6	39
1085	Peronia and Lynnhurst, W., n. e. cor.	High	Single	6	39
1086	Lynnhurst W and Oakley, s. w. cor.	High	Single	6	44
1087	Lynnhurst and University, s. w. cor.	High	Single	6	41
1088	Lynnhurst E. 300 feet North of Peronia	High	Single	6	43
1089	Oakley and Prior, n. e. cor.	High	Single	6	40
1090	Peronia and Fairview, n. w. cor.	High	Single	6	41
1091	Waltham, 300 feet East of Prior	High	Single	4	38
1092	Milwaukee Ave. and Marion Place	High	Single	6	39
1093	Milwaukee avenue and Astoria, n. e. cor.	High	Single	6	37
1094	St. Anthony and Ferdinand, n. w. cor.	High	Single	6	36
1095	St. Anthony and Howell	High	Single	6	37
1096	St. Anthony and Prior, n. w. cor.	High	Single	6	38
1097	St. Anthony and Merriam Place, n. w. cor.	High	Single	6	35
1098	St. Anthony and Astoria, n. e. cor.	High	Single	6	38
1099	St. Anthony and Cleveland, n. e. cor.	High	Single	6	38
1100	Rondo and Laura, n. e. cor.	High	Single	6	32
1101	Rondo and Ferdinand, n. e. cor.	High	Single	6	35



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT
1102	Rondo and Howell, n. e. cor.	High	Single	6	
1103	Rondo and Prior, n. e. cor.	High	Single	6	
1104	Rondo and Terrace Park avenue, n. e. cor.	High	Single	6	
1105	Carroll and Fairview, n. e. cor.	High	Single	6	
1106	Carroll and Laura, n. e. cor.	High	Single	6	
1107	Carroll and Ferdinand, n. e. cor.	High	Single	6	
1108	Carroll and Howell, n. e. cor.	High	Single	6	
1109	Carroll and Prior, n. e. cor.	High	Single	6	
1110	Carroll and Moore, n. e. cor.	High	Single	6	
1111	Carroll and Wilder, n. e. cor.	High	Single	6	
1112	Carroll and Cleveland, n. e. cor.	High	Single	6	
1113	Iglehart and Cleveland, n. e. cor.	High	Single	6	
1114	Iglehart and Wilder, n. w. cor.	High	Single	6	
1115	Iglehart and Moore, n. e. cor.	High	Single	6	
1116	Iglehart and Prior, n. e. cor.	High	Single	6	
1117	Iglehart and Howell, n. e. cor.	High	Single	6	
1118	Iglehart and Laura, n. w. cor.	High	Single	6	
1119	Wilder and Carroll, n. w. cor.	High	Single	6	
1120	Wilder and Rondo, s. w. cor.	High	Single	6	
1121	Fauquier and Frank, n. w. cor.	High	Single	6	
1122	Plum and Hoffman, n. e. cor.	High	Single	6	
1123	Freemont and Forrest, n. w. cor.	High	Single	6	
1124	Prior and University, s. e. cor.	High	Single	12	
1125	Prior and Peronia, n. e. cor.	High	Single	12	
1126	Sibley and Fourth, s. w. cor.	Low	Double	6	
1127	Prior and Marshall, n. w. cor.	High	Single	12	
1128	Chicago and Starkey, n. w. cor.	Low	Single	6	
1129	Chicago and Custer, n. w. cor.	Low	Single	6	
1130	Emma and Railroad.	Low	Single	6	
1131	Robie and Brown, n. w. cor.	Low	Single	6	
1132	Rondo and Kent, n. e. cor.	High	Single	6	
1133	Short and Maria, n. w. cor.	High	Single	6	
1134	Ravine, 325 ft. west of Maria	High	Single	4	
1135	Cedar and Fourth, s. e. cor.	Low	Double	12	
1136	Wabasha and Fourth, n. e. cor.	Low	Double	6	
1137	Third and Exchange, s. side.	Low	Double	12	
1138	Third and Franklin, s. side.	Low	Double	12	
1139	Third and Washington, s. side.	Low	Double	12	
1140	Third and Market, s. side.	Low	Double	12	
1141	Third and St. Peter, s. side.	Low	Double	12	
1142	Cedar and Third, s. e. cor.	Low	Double	12	
1143	Wabasha and Third, s. w. cor.	Low	Double	12	
1144	Lafond and Claghorn, n. w. cor.	High	Single	6	
1145	Claghorn and Lake, s. w. cor.	High	Single	6	
1146	Claghorn and VanBuren, s. w. cor.	High	Single	6	
1147	George and Livingston, n. w. cor.	Low	Single	12	
1148	George and Gorman, n. w. cor.	Low	Single	12	
1149	George and Goff, n. w. corner.	Low	Single	12	
1150	George and Hall, n. w. cor.	Low	Single	12	
1151	George and Stryker, n. e. cor.	Low	Single	12	
1152	Stryker and Robie, n. w. cor.	Low	Single	6	
1153	Stryker and Winnifred, n. w. cor.	Low	Single	6	
1154	Stryker and Congress, n. w. cor.	Low	Single	6	
1155	Stryker and Delos, s. w. cor.	Low	Single	6	
1156	Stryker and Colorado, s. w. cor.	Low	Single	6	
1157	Stryker and Prospect Terrace, s. w. cor.	Low	Single	6	
1158	Ellen and St. Albans, n. e. cor.	High	Single	6	
1159	Seventh and John, s. e. cor.	Low	Double	16	
1160	Seventh and Olive, s. e. cor.	Low	Double	16	
1161	Seventh and Pine, s. e. cor.	Low	Double	16	
1162	Seventh and Broadway, n. e. cor.	Low	Double	16	
1163	Seventh and Rosabel, n. e. cor.	Low	Double	16	
1164	Seventh and Sibley, n. e. cor.	Low	Double	16	
1165	Wacouta and Seventh, s. e. cor.	Low	Double	12	
1166	Locust and Seventh, n. e. cor.	Low	Double	20	
1167	Charles and Grotto, n. e. cor.	High	Single	6	
1168	Charles and Avon, n. e. cor.	High	Single	6	
1169	Aurora and St. Albans, n. e. cor.	High	Single	6	
1170	Rondo and St. Albans, n. e. cor.	High	Single	6	

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1171	Rondo and Grotto, n. e. cor.	High	Single	6	38
1172	Rondo and Avon, n. e. cor.	High	Single	6	43
1173	Rondo and Fisk, n. e. cor.	High	Single	6	45
1174	Rondo and Victoria, n. e. cor.	High	Single	6	46
1175	Indiana and Wabasha, n. w. cor.	Low	Single	12	69
1176	Indiana and Edward, n. w. cor.	Low	Single	12	69
1177	Indiana and Water, n. w. cor.	Low	Single	12	69
1178	Indiana and Hyde, n. w. cor.	Low	Single	12	69
1179	Indiana and Moses, n. w. cor.	Low	Single	12	69
1180	Indiana and Daniel, n. e. cor.	Low	Single	12	68
1181	Indiana and Ethel, n. e. cor.	Low	Single	12	63
1182	Holly and Victoria, n. e. cor.	High	Single	6	32
1183	St. Anthony and St. Albans, n. e. cor.	High	Single	6	33
1184	George and S. Robert, n. w. cor.	Low	Single	12	25
1185	George and Maurice	Low	Single	12	28
1186	State and George, s. w. cor.	Low	Single	16	48
1187	State and Dearborn, n. w. cor.	Low	Single	16	43
1188	State and Oakdale	Low	Single	16	40
1189	Oakdale and Prescott	Low	Single	16	28
1190	Oakdale and Midway	Low	Single	6	18
1191	Thomas and Claghorn, n. e. cor.	High	Single	6	57
1192	Thomas and Gaultier, n. e. cor.	High	Single	6	59
1193	Thomas and Ellet, n. e. cor.	High	Single	6	58
1194	Thomas and Farrington, n. e. cor.	High	Single	6	56
1195	Thomas and Virginia, n. e. cor.	High	Single	6	53
1196	Virginia and Lafond, s. w. cor.	High	Single	4	57
1197	Farrington and Lafond, s. w. cor.	High	Single	4	58
1198	Ellet and Lafond, s. w. cor.	High	Single	4	59
1199	Gaultier and Lafond, s. w. cor.	High	Single	6	60
1200	Snelling and Edmund	High	Single	16	32
1201	Snelling and Blair	High	Single	16	30
1202	Snelling and Minnehaha, n. w. cor.	High	Single	16	29
1203	Snelling and Capitol, n. w. cor.	High	Single	16	28
1204	Snelling and Wesley, n. w. cor.	High	Single	16	27
1205	Snelling and G. N. Ry, s. w. cor.	High	Single	16	24
1206	Walker and G. N. Ry, s. w. cor.	High	Single	4	24
1207	Taylor and Charlotte, n. e. cor.	High	Single	6	25
1208	Taylor and Walker, n. w. cor.	High	Single	6	26
1209	Taylor and Snelling, n. w. cor.	High	Single	6	25
1210	Taylor and Asbury, n. w. cor.	High	Single	6	24
1211	Taylor and Simpson, n. w. cor.	High	Single	6	24
1212	Taylor and Pascal, n. w. cor.	High	Single	6	25
1213	Taylor and Holton, n. w. cor.	High	Single	6	26
1214	Hewitt and Hamline, n. w. cor.	High	Single	6	25
1215	Hewitt and Sheldon, n. w. cor.	High	Single	6	24
1216	Hewitt and Holton, n. w. cor.	High	Single	6	27
1217	Hewitt and Pascal, n. w. cor.	High	Single	6	26
1218	Hewitt and Simpson, n. w. cor.	High	Single	6	24
1219	Hewitt and Asbury, n. w. cor.	High	Single	6	25
1220	Hewitt and Snelling, n. w. cor.	High	Single	6	26
1221	Hewitt and Walker, n. w. cor.	High	Single	6	26
1222	Hewitt and Charlotte, n. w. cor.	High	Single	6	27
1223	Hewitt and Aldine, n. w. cor.	High	Single	6	29
1224	Wesley and Fry, n. w. cor.	High	Single	6	30
1225	Wesley and Simpson	High	Single	6	26
1226	Pascal and Wesley, n. w. cor.	High	Single	6	26
1227	Pascal and Capitol, n. w. cor.	High	Single	6	26
1228	Capitol and Simpson, n. w. cor.	High	Single	6	27
1229	Capitol and Asbury	High	Single	6	27
1230	Minnehaha and Asbury, n. w. cor.	High	Single	12	28
1231	Minnehaha and Simpson, n. w. cor.	High	Single	12	27
1232	Minnehaha and Pascal, n. w. cor.	High	Single	12	27
1233	Minnehaha and Holton, n. w. cor.	High	Single	12	26
1234	Minnehaha and Sheldon, n. w. cor.	High	Single	12	26
1235	Eagle and Franklin, n. w. cor.	Low	Single	6	59
1236	Maria and North, s. w. cor.	High	Single	6	67
1237	North and Tuxton, n. w. cor.	High	Single	6	65
1238	Banfil and Richmond, n. e. cor.	Low	Single	4	32



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1239	North and Bates, n. w. cor.	High	Single	6	63
1240	Bates and Maury, s. w. cor.	High	Single	6	60
1241	Hope and Seventh, s. w. cor.	High	Single	6	40
1242	Arcade and Seventh, s. w. cor.	High	Single	6	46
1243	Arcade and Dawson	High	Single	6	36
1244	Front and Como, n. w. cor.	High	Single	12	41
1245	Front and Grotto, n. e. cor.	High	Single	12	43
1246	Front and Avon, n. e. cor.	High	Single	12	37
1247	Front and South, n. e. cor.	High	Single	12	33
1248	Front and Ryde, n. e. cor.	High	Single	12	33
1249	Front and Chatsworth, n. e. cor.	High	Single	12	31
1250	Front and Argyle, n. e. cor.	High	Single	12	30
1251	Front and Oxford, n. e. cor.	High	Single	12	30
1252	Front and Churchill, n. e. cor.	High	Single	12	32
1253	Front and Lexington, n. e. cor.	High	Single	12	34
1254	Seventh and Newcomb, n. w. cor.	High	Single	16	54
1255	Seventh and Atlantic, n. w. cor.	High	Single	16	54
1256	Seventh and Ocean, n. w. cor.	High	Single	16	58
1257	Minnehaha and Duluth, n. w. cor.	High	Single	6	57
1258	Minnehaha and Frank, n. w. cor.	High	Single	6	51
1259	Dayton Place, 200 ft. west of Maria	High	Single	4	72
1260	Minnehaha and Seventh, n. e. cor.	High	Single	6	55
1261	Minnehaha and Forrest, n. e. cor.	High	Single	6	56
1262	Minnehaha and Cypress, n. e. cor.	High	Single	6	58
1263	Dale and Great Northern Ry. Co.	High	Single	24	52
1264	Burgess and Dale, n. e. cor.	High	Single	6	45
1265	Topping and Dale, n. e. cor.	High	Single	6	44
1266	Case and Terrace	High	Single	6	76
1267	Toronto and Palace, n. w. cor.	Low	Single	6	33
1268	Toronto and Jefferson, s. w. cor.	Low	Single	6	33
1269	Lexington and N. P. Ry., s. e. cor.	High	Single	16	28
1270	Third and Robert, n. e. cor.	Low	Double	12	47
1271	Third and Minnesota, n. w. cor.	Low	Double	12	40
1272	Robert and Fourth, s. e. cor.	Low	Double	6	46
1273	Hastings and Maple, n. w. cor.	High	Single	12	58
1274	Maple and Plum, n. w. cor.	High	Single	12	49
1275	Sherburne and Grotto, n. e. cor.	High	Single	6	48
1276	Sherburne and Avon, n. e. cor.	High	Single	6	58
1277	Sherburne and Victoria, n. e. cor.	High	Single	6	47
1278	Freemont and Arcade, n. e. cor.	High	Single	6	39
1279	East Third and Arcade, n. w. cor.	High	Single	6	44
1280	Conway and Cypress, n. w. cor.	High	Single	6	46
1281	Sibley, between Fifth and Sixth	Low	Double	6	48
1282	Freemont and Cypress, n. w. cor.	High	Single	6	48
1283	Forrest and Fourth, s. w. cor.	High	Single	6	45
1284	Forrest and Francis, s. w. cor.	High	Single	6	46
1285	Columbia and Arch, s. w. cor.	Low	Single	6	30
1286	Columbia and Pennsylvania, n. w. cor.	Low	Single	6	32
1287	Sims and Mendota, n. w. cor.	High	Single	6	50
1288	Sims and Edgerton, n. e. cor.	High	Single	6	74
1289	York and Jessie, n. w. cor.	High	Single	6	73
1290	York and Bradley, n. w. cor.	High	Single	6	64
1291	Fairmount and Avon, n. e. cor.	High	Single	6	31
1292	Fairmount and Victoria, n. e. cor.	High	Single	6	33
1293	Lisbon and Pleasant, n. e. cor.	Low	Single	6	28
1294	Pleasant and Western, s. w. cor.	Low	Single	6	26
1295	University, under east end of bridge	High	Single	20	40
1296	University, under centre of bridge	High	Single	20	40
1297	University and Cleveland	High	Single	20	40
1298	University, under west end of bridge	High	Single	20	40
1299	University and Vandalia, n. w. cor.	High	Single	20	42
1300	University and Pillsbury, n. w. cor.	High	Single	20	46
1301	University and Hersey, n. w. cor.	High	Single	20	48
1302	University and LaSalle, n. w. cor.	High	Single	20	46
1303	University and Carleton, n. w. cor.	High	Single	20	43
1304	Cayuga and Mississippi, n. w. cor.	High	Single	6	86
1305	Cayuga, 300 ft. west of Mississippi	High	Single	4	72
1306	Raymond and University, n. w. cor.	High	Single	16	42

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1307	Raymond and Territorial Road, s. w. cor.	High	Single	16	39
1308	Raymond and Ellis, n. w. cor.	High	Single	16	34
1309	Raymond and Bayless av. east, n. w. cor.	High	Single	6	42
1310	Raymond and Manvel, s. w. cor.	High	Single	6	35
1311	Cudworth and Bayless avenue, n. w. cor.	High	Single	6	43
1312	Cudworth and Cromwell, n. e. cor.	High	Single	6	43
1313	Cudworth and Eustis, n. e. cor.	High	Single	6	38
1314	Pym and Bayless, n. w. cor.	High	Single	12	42
1315	Pym and Cromwell, n. e. cor.	High	Single	12	35
1316	Pym and Eustis, n. e. cor.	High	Single	12	34
1317	Cromwell, 200 ft. south of Manvel	High	Single	6	40
1318	Manvel and Robbins, n. e. cor.	High	Single	6	46
1319	Manvel and Bayless, n. e. cor.	High	Single	6	41
1320	Bayless and Robbins, s. w. cor.	High	Single	16	41
1321	Bayless, head of Bayless avenue east	High	Single	14	41
1322	Hampden and Bradford, n. e. cor.	High	Single	6	43
1323	Hampden, 400 feet east of Bradford	High	Single	6	41
1324	Hampden and Hersey, n. w. cor.	High	Single	6	42
1325	Sidney and Bradford, n. w. cor.	High	Single	6	39
1326	Sidney and Raymond, n. e. cor.	High	Single	6	42
1327	Cayuga and Agate, n. w. cor.	High	Single	6	78
1328	Cayuga and Courtland, n. e. cor.	High	Single	6	60
1329	Osceola and Pleasant, n. e. cor.	High	Single	6	64
1330	Osceola, 400 feet west of Pleasant	High	Single	6	49
1331	Osceola and Grotto, n. e. cor.	High	Single	6	34
1332	Osceola and Avon, n. e. cor.	High	Single	6	32
1333	Osceola and Victoria, n. e. cor.	High	Single	6	34
1334	Victoria and St. Clair, n. w. cor.	High	Single	16	39
1335	Magnolia and Edgerton, n. e. cor.	High	Single	6	49
1336	Magnolia and Payne, n. w. cor.	High	Single	6	53
1337	Magnolia and Greenbrier, n. w. cor.	High	Single	6	40
1338	Snelling and Shield, s. w. cor.	High	Single	16	31
1339	Snelling and St. Anthony, n. w. cor.	High	Single	16	29
1340	Snelling and Carroll, n. w. cor.	High	Single	16	30
1341	Carroll and Fry, n. e. cor.	High	Single	6	29
1342	Payne and Jessamine, s. w. cor.	High	Single	6	46
1343	Jessamine and Greenbrier, n. w. cor.	High	Single	6	38
1344	Jessamine and Edgerton, n. e. cor.	High	Single	6	43
1345	Goodhue and Duke, n. e. cor.	Low	Single	6	33
1346	Payne and Geranium, s. w. cor.	High	Single	6	43
1347	Payne and Rose, s. w. cor.	High	Single	6	40
1348	Edgerton and Jenks, n. w. cor.	High	Single	12	73
1349	Edgerton and Lawson, n. w. cor.	High	Single	12	66
1350	Edgerton and Geranium, s. w. cor.	High	Single	12	39
1351	Edgerton and Rose, s. w. cor.	High	Single	12	37
1352	Jessamine and Jessie, n. e. cor.	High	Single	6	31
1353	Jessamine and Bradley, n. e. cor.	High	Single	6	32
1354	Cook and Edgerton, n. e. cor.	High	Single	6	57
1355	Robert and Dearborn, n. w. cor.	Low	Single	6	22
1356	Robert and Louisa, n. w. cor.	Low	Single	6	20
1357	Robert and Elizabeth, n. w. cor.	Low	Single	6	13
1358	Cook and Greenbrier, n. w. cor.	High	Single	6	43
1359	Beaumont and Payne, n. w. cor.	Low	Single	4	27
1360	Aurora and Victoria, n. w. cor.	High	Single	6	45
1361	Aurora and Milton, n. e. cor.	High	Single	6	48
1362	Fuller and Victoria, n. w. cor.	High	Single	6	47
1363	Fuller and Milton, n. e. cor.	High	Single	6	49
1364	Martin and Victoria, n. w. cor.	High	Single	6	48
1365	Martin and Milton, n. e. cor.	High	Single	6	49
1366	St. Anthony and Victoria, n. w. cor.	High	Single	6	47
1367	St. Anthony and Milton, n. e. cor.	High	Single	6	48
1368	Victoria and Marshall, n. w. cor.	High	Single	16	34
1369	Cook and Walsh, n. e. cor.	High	Single	6	46
1370	Cook and Weide, n. e. cor.	High	Single	6	49
1371	Cook and Mendota, n. w. cor.	High	Single	6	45
1372	Snelling and Marshall, s. w. cor.	High	Single	16	32
1373	Snelling and Selby, s. w. cor.	High	Single	16	26
1374	Snelling and Hague, s. w. cor.	High	Single	16	27



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT
1375	Snelling and Ashland, s. w. cor.	High	Single	16	
1376	Snelling and Summit, s. w. cor.	High	Single	16	
1377	Snelling and Grand, s. w. cor.	High	Single	16	
1378	Snelling and Lincoln	High	Single	16	
1379	Snelling and Goodrich	High	Single	16	
1380	Summit and Macalister, s. e. cor.	High	Single	4	
1381	Jessamine and Weide, n. e. cor.	High	Single	6	
1382	Jessamine and Arcade, n. e. cor.	High	Single	6	
1383	Jessamine and Mendota, n. w. cor.	High	Single	6	
1384	Jessamine and Forrest, n. w. cor.	High	Single	6	
1385	Forrest and Geranium, s. w. cor.	High	Single	6	
1386	Burr and Lawson, s. w. cor.	High	Single	6	
1387	Burr and Cook, s. w. cor.	High	Single	6	
1388	Selby and Milton, n. e. cor.	High	Single	6	
1389	Ashland and Milton, n. e. cor.	High	Single	6	
1390	Victoria and Ashland, n. w. cor.	High	Single	16	
1391	Dayton and Milton, n. e. cor.	High	Single	6	
1392	Clark and Whitall, n. w. cor.	High	Single	6	
1393	Clark and York, s. w. cor.	High	Single	6	
1394	Clark and Lookout Place	High	Single	6	
1395	Clark and Case, s. w. cor.	High	Single	6	
1396	Iglehart and Milton, n. e. cor.	High	Single	6	
1397	Iglehart and Chatsworth, n. e. cor.	High	Single	6	
1398	Iglehart and Oxford, n. e. cor.	High	Single	6	
1399	Tuscarora and Victoria, n. e. cor.	Low	Single	6	
1400	Whitall and Bradley, n. w. cor.	High	Single	6	
1401	Rondo and Milton, n. e. cor.	High	Single	6	
1402	Whitall and DeSoto, n. w. cor.	High	Single	6	
1403	DeSoto and York, n. w. cor.	High	Single	6	
1404	Mound and Burns	High	Single	12	
1405	Mayall Alley, 125 feet North of Seventh	Low	Single	4	
1406	Burns and Clermont	High	Single	6	
1407	Cross and Lexington, n. e. cor.	High	Single	6	
1408	Work House, n. e. cor.	High	Single	6	
1409	Work House, s. e. cor.	High	Single	6	
1410	Burns and Earl, n. e. cor.	High	Single	6	
1411	Burns and Hester, n. e. cor.	High	Single	6	
1412	Burns and Griffith, n. w. cor.	High	Single	6	
1413	Van Slyke and Lexington, n. e. cor.	High	Single	6	
1414	Van Slyke and Horton, n. e. cor.	High	Single	6	
1415	Van Slyke and Argyle	High	Single	6	
1416	Argyle and Cross, s. w. cor.	High	Single	6	
1417	Tuscarora and Milton, n. e. cor.	Low	Single	6	
1418	Francis and Cypress, n. w. cor.	High	Single	6	
1419	Robbins and Raymond Place, s. w. cor.	High	Single	6	
1420	Bayless and Talbot, n. w. cor.	High	Single	16	
1421	Wheeler and Bayless, n. e. cor.	High	Single	12	
1422	Wheeler and Ada Place, n. w. cor.	High	Single	12	
1423	Wheeler and Everett Court	High	Single	12	
1424	Everett Court and G. N. Ry, n. w. cor.	High	Single	6	
1425	Raymond and Kendrick, n. w. cor.	High	Single	6	
1426	Raymond and Blake, n. w. cor.	High	Single	6	
1427	Raymond and Att'y Place, s. w. cor.	High	Single	6	
1428	Raymond and Langford ave., s. w. cor.	High	Single	6	
1429	Priscilla and Raymond, n. e. cor.	High	Single	6	
1430	Priscilla, 500 feet east of Raymond	High	Single	6	
1431	Pratt and Raymond, n. e. cor.	High	Single	6	
1432	Pratt and Alden, n. w. cor.	High	Single	6	
1433	Pratt and Gibbs, n. w. cor.	High	Single	6	
1434	Blake and Langford Place east, n. e. cor.	High	Single	16	
1435	Blake and Scudder, n. e. cor.	High	Single	6	
1436	Scudder and Atty Place	High	Single	16	
1437	Scudder and Gordon, n. e. cor.	High	Single	6	
1438	Langford and Scudder, n. w. cor.	High	Single	16	
1439	Langford and Knapp, n. e. cor.	High	Single	16	
1440	County Road and Duoley, s. w. cor.	High	Single	16	
1441	Dawson and Francis, n. w. cor.	High	Single	6	
1442	Crocus Place	High	Single	4	

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1443	Delos and Hall, n. w. cor.	Low	Single	6	20
1444	Langford P. P., W., and Bayless, s. w. cor.	High	Single	12	45
1445	Langford P. P., W., and N. P. Ry, n. w. cor.	High	Single	6	35
1446	Langford P. P., W., and Blake, s. w. cor.	High	Single	12	37
1447	Gordon and Langford P. P., W., n. w. cor.	High	Single	12	36
1448	Gordon and Nourse	High	Single	12	37
1449	Goff and Winnifred, n. w. cor.	Low	Single	6	34
1450	Dooley and Chelmsford, n. w. cor.	High	Single	6	23
1451	Winnifred and Hall, n. w. cor.	Low	Single	6	31
1452	Robie and Andrew, n. w. cor.	Low	Single	6	32
1453	Iglehart and Fairview, n. w. cor.	High	Single	6	31
1454	Hall and Congress, n. w. cor.	Low	Single	6	27
1455	Marshall and Amos, n. e. cor.	High	Single	12	33
1456	Midway and Mt. Hope, n. e. cor.	Low	Single	6	18
1457	Midway and Harvard, n. w. cor.	Low	Single	6	21
1458	Midway and Woodbury, n. w. cor.	Low	Single	6	23
1459	Midway and Brown, n. w. cor.	Low	Single	6	38
1460	Prescott and Mt. Hope, n. w. cor.	Low	Single	6	22
1461	Prescott and Harvard, n. w. cor.	Low	Single	6	22
1462	Prescott and Woodbury, n. w. cor.	Low	Single	6	24
1463	Langford P. P., E., and Gordon, n. e. cor.	High	Single	6	41
1464	Knapp and Langford P. P., east	High	Single	6	42
1465	Knapp and Langford P. P., west	High	Single	6	42
1466	Knapp and Langford avenue, n. e. cor.	High	Single	6	33
1467	Reaney and St. P. & D. Ry., n. w. cor.	Low	Single	6	18
1468	Armstrong and View, n. e. cor.	Low	Single	6	32
1469	Armstrong and Victoria, n. e. cor.	Low	Single	6	28
1470	Armstrong and Milton, n. e. cor.	Low	Single	6	27
1471	Armstrong and Chatsworth, n. e. cor.	Low	Single	6	26
1472	St. Peter and Fifth, s. e. cor.	Low	Double	6	33
1473	Martin and St. Albans, n. e. cor.	High	Single	6	34
1474	Martin and Grotto, n. e. cor.	High	Single	6	45
1475	Wabasha and Sixth, s. e. cor.	Low	Double	6	31
1476	Armstrong and Warsaw, n. e. cor.	Low	Single	6	37
1477	Armstrong and Drake, n. w. cor.	Low	Single	6	42
1478	St. Anthony and Grotto, n. e. cor.	High	Single	6	42
1479	St. Anthony and Ayon, n. e. cor.	High	Single	6	45
1480	St. Anthony and Fisk, n. e. cor.	High	Single	6	46
1481	Whitall and Jessie, n. w. cor.	High	Single	6	60
1482	Carroll and Chatsworth, n. e. cor.	High	Single	6	42
1483	Warsaw and Audubon, n. w. cor.	Low	Single	6	35
1484	Whitall and Edgerton, n. e. cor.	High	Single	6	67
1485	Dayton and Laura, n. w. cor.	High	Single	6	31
1486	Dayton and Amos, n. w. cor.	High	Single	6	33
1487	Dayton and Moore, n. e. cor.	High	Single	6	43
1488	Dayton and Wilder, n. e. cor.	High	Single	6	44
1489	Dayton and Cleveland, n. e. cor.	High	Single	6	45
1490	Prior and Dayton, n. w. cor.	High	Single	6	38
1491	Westminster and Lookout Place, n. w. cor.	High	Single	6	64
1492	Lookout Place and Arkwright, n. w. cor.	High	Single	6	63
1493	Dayton and Chatsworth, n. e. cor.	High	Single	6	40
1494	Dayton and Oxford, n. e. cor.	High	Single	6	45
1495	Wabasha and Fifth, n. e. cor.	Low	Double	6	34
1496	Randolph and Toronto, n. w. cor.	Low	Single	6	38
1497	St. Anthony and Fairview, n. w. cor.	High	Single	6	30
1498	Jessie and Jenks, s. w. cor.	High	Single	6	72
1499	Jessie and Lawson, s. w. cor.	High	Single	6	65
1500	Jessie and Cook, s. w. cor.	High	Single	6	53
1501	Jessie and Magnolia, s. w. cor.	High	Single	6	40
1502	Laurel and Victoria, n. w. cor.	High	Single	6	32
1503	Laurel and Milton, n. e. cor.	High	Single	6	38
1504	Laurel and Chatsworth, n. e. cor.	High	Single	6	30
1505	Laurel and Oxford, n. e. cor.	High	Single	6	31
1506	Lincoln and Chatsworth, n. e. cor.	High	Single	6	36
1507	Lincoln and Oxford, n. e. cor.	High	Single	6	48
1508	Magnolia and Walsh, n. e. cor.	High	Single	6	47
1509	Magnolia and Weide, n. e. cor.	High	Single	6	47
1510	Magnolia and Mendota, n. e. cor.	High	Single	6	42



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STREAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1511	Magnolia and Forrest, n. e. cor.	High	Single	6	40
1512	St. Anthony and Roy	High	Single	6	29
1513	St. Anthony and Fry, n. e. cor.	High	Single	6	29
1514	St. Anthony and Pierce, n. e. cor.	High	Single	6	31
1515	St. Anthony and Aldine, n. w. cor.	High	Single	6	32
1516	St. Anthony and Herschel, n. w. cor.	High	Single	6	33
1517	St. Anthony and Wheeler ave, n. w. cor.	High	Single	6	34
1518	St. Anthony and Bacon, n. w. cor.	High	Single	6	34
1519	Goodrich and Milton, n. e. cor.	High	Single	6	38
1520	Goodrich and Chatsworth, n. e. cor.	High	Single	6	40
1521	Goodrich and Oxford, n. e. cor.	High	Single	6	35
1522	Mt. Ida and Rivoil, n. e. cor.	High	Single	6	65
1523	Osceola and Milton, n. e. cor.	High	Single	6	45
1524	Osceola and Chatsworth, n. e. cor.	High	Single	6	36
1525	Evergreen and Chatsworth, n. w. cor.	High	Single	6	39
1526	Evergreen and Oxford, n. e. cor.	High	Single	6	32
1527	Arcade and Rose, s. w. cor.	High	Single	12	46
1528	Rose and Weide, n. e. cor.	High	Single	12	45
1529	Rose and Walsh, n. e. cor.	High	Single	6	46
1531	Fairview and Shields	High	Single	16	37
1532	Geranium and Weide, n. e. cor.	High	Single	6	47
1533	Geranium and Walsh, n. e. cor.	High	Single	6	45
1534	Geranium and Greenbrier, n. e. cor.	High	Single	6	40
1535	Fairview and Sherburne	High	Single	16	40
1536	St. Clair and Roche	High	Single	12	43
1537	St. Clair and Milton, n. w. cor.	High	Single	12	77
1538	St. Clair and Chatsworth, n. e. cor.	High	Single	12	38
1539	St. Clair and Ridgewood avenue	High	Single	12	33
1540	St. Clair and Oxford, n. e. cor.	High	Single	12	30
1541	Jessamine and Fairview, n. w. cor.	High	Single	6	46
1542	Charles, 500 feet west of Fairview	High	Single	6	40
1543	Charles, 500 feet west of Fairview	High	Single	6	37
1544	Wheeler and Shields, n. w. cor.	High	Single	6	36
1545	Jessamine and Burr, n. e. cor.	High	Single	6	42
1546	Bacon and Shields, n. w. cor.	High	Single	4	36
1547	Jessamine and DeSoto, n. e. cor.	High	Single	6	46
1548	Jessamine and Clark, n. e. cor.	High	Single	6	50
1549	Jessamine and Arkwright, n. e. cor.	High	Single	6	46
1550	Portland and Victoria, n. e. cor.	High	Single	6	32
1551	Jessamine and Woodland, n. e. cor.	High	Single	6	44
1552	Jessamine and McMenemy, n. e. cor.	High	Single	6	51
1553	Jessamine, 150 feet east of Mississippi	High	Single	6	70
1554	Territorial Road and Hunt Place, n. w. cor.	High	Single	6	43
1555	Territorial Road and Cromwell, n. e. cor.	High	Single	6	44
1556	Territorial Road and Eustis, n. e. cor.	High	Single	6	40
1557	Hague avenue and Milton street, n. e. cor.	High	Single	6	35
1558	Hague avenue and Chatsworth, n. e. cor.	High	Single	6	31
1559	Hague avenue and Oxford, n. e. cor.	High	Single	6	32
1560	Hague avenue and Lexington, n. e. cor.	High	Single	6	36
1561	Mulberry and Sixth, s. w. cor.	High	Single	4	62
1562	Payne and Maryland, s. w. cor.	High	Single	6	38
1563	Payne and Hawthorne, s. w. cor.	High	Single	6	40
1564	Payne and Orange, s. w. cor.	High	Single	6	39
1565	Payne and Hyacinth, s. w. cor.	High	Single	6	38
1566	Payne and Ivy, s. w. cor.	High	Single	6	36
1567	Nourse and N. D. R. R., n. w. cor.	High	Single	6	35
1568	DeSoto and Jenks, s. w. cor.	High	Single	6	61
1569	DeSoto and Lawson, s. w. cor.	High	Single	6	49
1570	Charles and Arundel, n. e. cor.	High	Single	6	57
1571	Virginia and Blair, n. w. cor.	High	Single	4	58
1572	Virginia and Minnehaha, s. w. cor.	High	Single	4	57
1573	Capitol and Fry, n. e. cor.	High	Single	6	29
1574	Capitol and Aldine, n. e. cor.	High	Single	6	25
1575	Capitol and Wheeler, n. e. cor.	High	Single	6	30
1576	Arch and Fairview, n. w. cor.	High	Single	6	52
1577	Arch and Warren	High	Single	6	36
1578	Arch and Mt. Vernon, n. e. cor.	High	Single	6	49

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1579	Arch, 300 feet east of Linden.....	High.....	Single.....	6	71
1580	Arch, 100 feet west of Columbia.....	High.....	Single.....	6	84
1581	Gaultier and Topping, n. w. cor.....	High.....	Single.....	6	62
1582	Gaultier and Burgess, n. w. cor.....	High.....	Single.....	6	62
1583	Gaultier and Stinson, n. w. cor.....	High.....	Single.....	6	56
1584	Gaultier and Hatch, n. w. cor.....	High.....	Single.....	6	49
1585	Gaultier and Lawson, n. w. cor.....	High.....	Single.....	6	44
1586	Gaultier and Cook, s. w. cor.....	High.....	Single.....	6	46
1587	Stinson and Farrington, n. e. cor.....	High.....	Single.....	6	52
1588	Minnehaha and Duluth Ry.....	High.....	Single.....	12	78
1589	Minnehaha and Greenbrier, n. e. cor.....	High.....	Single.....	12	77
1590	Minnehaha and Walsh, n. e. cor.....	High.....	Single.....	12	67
1591	Minnehaha and Weide, n. e. cor.....	High.....	Single.....	12	59
1592	Woodbridge and Atwater, n. w. cor.....	High.....	Single.....	6	63
1593	Woodbridge and Milford, n. w. cor.....	High.....	Single.....	6	62
1594	Woodbridge and Wayzata, n. w. cor.....	High.....	Single.....	6	61
1595	Milford and Simcoe, n. w. cor.....	High.....	Single.....	6	62
1596	Milford and Albemarle, n. w. cor.....	High.....	Single.....	6	62
1597	Reaney and Duluth, n. w. cor.....	High.....	Single.....	6	62
1598	Reaney and Atlantic, n. w. cor.....	High.....	Single.....	6	60
1599	Reaney and English, n. w. cor.....	High.....	Single.....	6	53
1600	Rice and Gt. Northern Ry.....	High.....	Single.....	12	56
1601	Rice and Capitol.....	High.....	Single.....	12	59
1602	Fauquier and Duluth, n. w. cor.....	High.....	Single.....	6	63
1603	Milford and Rice, n. w. cor.....	High.....	Single.....	6	62
1604	Atlantic and Fauquier, n. w. cor.....	High.....	Single.....	6	61
1605	Fauquier, 300 feet east of Atlantic.....	High.....	Single.....	6	57
1606	Cleveland and Myrtle, s. w. cor.....	High.....	Single.....	16	39
1607	Cleveland and Wabash, s. w. cor.....	High.....	Single.....	16	38
1608	Cleveland, 300 feet north of Milwaukee Ry.....	High.....	Single.....	16	40
1609	Cleveland and Milwaukee Ry.....	High.....	Single.....	16	39
1610	Seventh and English, n. w. cor.....	High.....	Single.....	16	56
1611	Phalen and Seventh, n. w. cor.....	High.....	Single.....	12	55
1612	Phalen and Kerwin.....	High.....	Single.....	12	56
1613	Phalen and Brand, s. w. cor.....	High.....	Single.....	12	57
1614	Phalen and Chic, St. Paul & Omaha Ry.....	High.....	Single.....	12	56
1615	Phalen and Stillwater, s. w. cor.....	High.....	Double.....	12	55
1616	Cleveland and Rondo.....	High.....	Single.....	16	35
1617	Earl and Dawson, n. w. cor.....	High.....	Single.....	12	58
1618	Margaret and Frank, n. w. cor.....	High.....	Single.....	6	53
1619	Margaret and Gotzian.....	High.....	Single.....	6	49
1620	Carroll and Wheeler, n. w. cor.....	High.....	Single.....	6	32
1621	Freemont and Earl, n. w. cor.....	High.....	Single.....	6	57
1622	Rice and Hatch, n. w. cor.....	High.....	Single.....	16	59
1623	Rice and Lawson, n. w. cor.....	High.....	Single.....	16	59
1624	Rice and Cook, n. w. cor.....	High.....	Single.....	16	59
1625	Rice and Oliver, n. w. cor.....	High.....	Single.....	16	57
1626	Cook and Rice, n. e. cor.....	High.....	Single.....	6	59
1627	Cook and Park Ave., n. w. cor.....	High.....	Single.....	6	56
1628	Cook and Sylvan, n. w. cor.....	High.....	Single.....	6	51
1629	Hastings and Forrest, n. w. cor.....	High.....	Single.....	12	57
1630	Rice and Lyton.....	High.....	Single.....	16	64
1631	Rice and Wayzata, s. w. cor.....	High.....	Single.....	16	61
1632	Litchfield and Rice, n. e. cor.....	High.....	Single.....	6	61
1633	Litchfield and Park, n. w. cor.....	High.....	Single.....	6	56
1634	Litchfield and Sylvan, n. w. cor.....	High.....	Single.....	6	50
1635	Fuller and Chatsworth, n. e. cor.....	High.....	Single.....	6	49
1636	Fuller and Oxford, n. e. cor.....	High.....	Single.....	6	50
1637	Fuller, 200 feet west of Oxford.....	High.....	Single.....	6	49
1638	Hastings and Cypress, n. e. cor.....	High.....	Single.....	12	54
1639	Hastings and Earl, n. e. cor.....	High.....	Single.....	12	51
1640	Hastings and Frank, n. w. cor.....	High.....	Single.....	12	56
1641	Earl and Pacific, n. w. cor.....	High.....	Single.....	12	50
1642	Atwater and Rice, n. e. cor.....	High.....	Single.....	6	63
1643	Atwater and Park, n. w. cor.....	High.....	Single.....	6	62
1644	Atwater and Sylvan, n. w. cor.....	High.....	Single.....	6	59
1645	Earl and McLean, n. w. cor.....	High.....	Single.....	12	47
1646	Earl and Suburban, n. w. cor.....	High.....	Single.....	12	46



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1647	Sycamore and Rice, n. e. cor.	High	Single	12	63
1648	Sycamore and Park, n. e. cor.	High	Single	12	63
1649	Sycamore and Sylvan, n. w. cor.	High	Single	12	61
1650	Sycamore and Lightner, s. w. cor.	High	Single	12	64
1651	Sycamore and Jackson, s. w. cor.	High	Single	12	66
1652	Sycamore and Courtland, s. w. cor.	High	Single	12	66
1653	Maria and McLean, n. w. cor.	High	Single	6	73
1654	Jackson, under bridge, at round house.	High	Single	12	69
1655	Jackson, under bridge, at round house.	High	Single	12	69
1656	Jackson, north line of G. N. Ry., n. w. cor.	High	Single	12	60
1657	Jackson and Capitol, n. w. cor.	High	Single	12	63
1658	Lafond and Milton, n. e. cor.	High	Single	6	44
1659	Maria and McLean, s. w. cor.	High	Single	6	73
1660	Maria and Lizzie, s. e. cor.	High	Single	6	66
1661	Capitol and Sylvan, n. e. cor.	High	Single	6	62
1662	Capitol and Lightner Place, n. e. cor.	High	Single	6	66
1663	Stuart and Tuscarora, s. w. cor.	Low	Single	6	36
1664	Stewart and Bay, n. e. cor.	Low	Single	6	34
1665	Bay and Logan, n. w. cor.	Low	Single	6	37
1666	Bay and Tuscarora, n. w. cor.	Low	Single	6	35
1667	Hudson and Forrest, n. w. cor.	High	Single	6	58
1668	Hudson and Cypress, n. w. cor.	High	Single	6	50
1669	Selby and Chatsworth, n. e. cor.	High	Single	6	32
1670	Selby and Oxford, n. e. cor.	High	Single	6	36
1671	Mound and Clermont, n. w. cor.	High	Single	6	50
1672	Mound and Thorn	High	Single	6	46
1673	Mound, 335 feet west of Earl	High	Single	6	34
1674	Courtland and Agate, n. e. cor.	High	Single	16	66
1675	Courtland and York, n. e. cor.	High	Single	16	61
1676	Courtland and Poplar, n. e. cor.	High	Single	16	63
1677	Hall and Colorado, s. w. cor.	Low	Single	6	21
1678	Hall and Prospect Terrace, s. w. cor.	Low	Single	6	22
1679	Marshall and Laura, n. w. cor.	High	Single	12	29
1680	Marshall and Fairview, n. w. cor.	High	Single	12	28
1681	Marshall and Wheeler, n. w. cor.	High	Single	12	29
1682	View and Juno, n. w. cor.	Low	Single	6	32
1683	Minnehaha and Hamline, n. w. cor.	High	Single	12	27
1684	Hall and Robie, n. w. cor.	Low	Single	6	25
1685	Courtland and Case, n. e. cor.	High	Single	16	64
1686	Courtland and Jenks, n. e. cor.	High	Single	16	65
1687	Courtland and Lawson, n. e. cor.	High	Single	16	64
1688	Courtland and Cook	High	Single	16	64
1689	Courtland and Magnolia, n. w. cor.	High	Single	16	63
1690	Courtland and Jessamine, n. w. cor.	High	Single	16	62
1691	Courtland and Geranium, n. w. cor.	High	Single	16	61
1692	Courtland and Rose, n. w. cor.	High	Single	16	62
1693	Courtland Maryland, s. w. cor.	High	Single	16	64
1694	Congress and Goff, n. w. cor.	Low	Single	6	40
1695	Agate and York, s. w. cor.	High	Single	6	80
1696	Agate and Elk	High	Single	6	62
1697	Agate, 250 feet south of Granite	High	Single	6	52
1698	Pleasant and St. Albans, s. w. cor.	High	Single	12	66
1699	Hoffman and Hudson, s. w. cor.	High	Single	6	78
1700	St. Albans, 300 feet south of Fairmount	High	Single	12	51
1701	Winifred and Winslow, n. w. cor.	Low	Single	6	25
1702	Winifred and Bidwell, n. w. cor.	Low	Single	6	21
1703	Winifred and Bellows, n. w. cor.	Low	Single	6	21
1704	Wacouta, between Third and Fourth	Low	Double	6	62
1705	Fourth and Sibley, n. e. cor.	Low	Double	6	55
1706	Sibley and Union Depot	Low	Single	4	70
1707	Evergreen and Victoria, n. w. cor.	High	Single	6	36
1708	Evergreen and Milton, n. e. cor.	High	Single	6	47
1709	Sherburne and Milton, n. e. cor.	High	Single	6	49
1710	Sherburne and Chatsworth, n. e. cor.	High	Single	6	51
1711	Sixth, between Sibley and Wacouta	Low	Single	8	48
1712	Dearborn and Livingston, n. e. cor.	Low	Single	6	20
1713	Charles and Milton, n. e. cor.	High	Single	6	50
1714	Charles and Victoria, n. e. cor.	High	Single	6	49

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1715	Fifth and Broadway, n. e. cor.	Low	Double	6	57
1716	Fifth and Pine, n. e. cor.	Low	Single	6	55
1717	Fifth and Olive, n. e. cor.	Low	Single	6	56
1718	Edmund and Avon, n. e. cor.	High	Single	6	52
1719	Edmund and Victoria, n. e. cor.	High	Single	6	50
1720	Edmund and Milton, n. e. cor.	High	Single	6	48
1721	Woodward and John, n. e. cor.	Low	Single	4	40
1722	Grand avenue and Lexington, n. e. cor.	High	Single	6	40
1723	Leslie and Milton, n. e. cor.	High	Single	6	36
1724	Leslie and Chatsworth, n. e. cor.	High	Single	6	31
1725	Thomas and Victoria, n. e. cor.	High	Single	6	31
1726	Thomas and Milton, n. e. cor.	High	Single	6	30
1727	Thomas and Chatsworth, n. e. cor.	High	Single	6	52
1728	Thomas and St. Albans, n. e. cor.	High	Single	6	50
1729	Thomas and Grotto, n. e. cor.	High	Single	6	51
1730	Lafond and Avon, n. e. cor.	High	Single	6	48
1731	Lafond and Victoria, n. e. cor.	High	Single	6	50
1732	Randolph and Webster, n. w. cor.	Low	Single	6	42
1733	Yankee and Ann, n. e. cor.	Low	Single	4	40
1734	Van Buren and Grotto, n. e. cor.	High	Single	6	42
1735	Van Buren and Avon, n. e. cor.	High	Single	6	48
1736	Van Buren and Grotto, n. e. cor.	High	Single	6	53
1737	Van Buren and St. Albans, n. e. cor.	High	Single	6	55
1738	Van Buren and Kent, n. w. cor.	High	Single	6	57
1739	Van Buren and Mackubin, n. e. cor.	High	Single	6	58
1740	Congress and Winslow, n. w. cor.	Low	Single	6	24
1741	Congress and Bidwell, n. w. cor.	Low	Single	6	24
1742	Congress and Bellows, n. w. cor.	Low	Single	6	21
1743	Congress and Charlton, n. e. cor.	Low	Single	6	19
1744	Fred, in rear of Lincoln School	Low	Single	4	19
1745	View and Watson, n. w. cor.	Low	Single	6	33
1746	Watson and Victoria, n. e. cor.	Low	Single	6	29
1747	Watson and Milton, n. e. cor.	Low	Single	6	28
1748	Watson and Chatsworth, n. e. cor.	Low	Single	6	27
1749	Wabasha, head of Eighth street	Low	Double	6	33
1750	Fifth and Market, s. w. cor.	Low	Single	4	32
1751	Logan and Canton, n. e. cor.	Low	Single	6	34
1752	Logan and Orrin	Low	Single	6	35
1753	Elfelf and Blair, s. w. cor.	High	Single	4	60
1754	Fourth, east of St. Paul & Duluth Ry.	Low	Double	12	70
1755	Manitoba and Rice, n. e. cor.	High	Single	6	62
1756	Manitoba and Park, n. w. cor.	High	Single	6	60
1757	Manitoba and Sylvan, n. w. cor.	High	Single	6	56
1758	Front and Sylvan, n. w. cor.	High	Single	6	46
1759	Front and Park, n. w. cor.	High	Single	6	46
1760	Fuller and St. Albans, n. e. cor.	High	Single	6	39
1761	Charles and Prior, n. e. cor.	High	Single	6	38
1762	Charles, 500 feet east of Prior	High	Single	6	59
1763	Wacouta and Fourth, s. e. cor.	Low	Double	6	29
1764	Dayton and Snelling, n. w. cor.	High	Single	6	32
1765	Dayton and Fry, n. w. cor.	High	Single	6	33
1766	Dayton and Pierce, n. w. cor.	High	Single	6	33
1767	Dayton and Herschell, n. e. cor.	High	Single	6	32
1768	Dayton and Wheeler, n. w. cor.	High	Single	6	30
1769	Dayton and Fairview, n. e. cor.	High	Single	6	52
1770	Wacouta and Fifth, n. w. cor.	Low	Double	12	51
1771	Fifth, midway between Sibley and Wacouta	Low	Single	6	49
1772	Sibley and Fifth, n. e. cor.	Low	Double	6	28
1773	Fry and Minnehaha, n. w. cor.	High	Single	4	30
1774	Blair and Fry, n. w. cor.	High	Single	4	28
1775	Van Buren and Fry, n. w. cor.	High	Single	6	27
1776	Van Buren and Aldine, n. e. cor.	High	Single	6	29
1777	Van Buren and Wheeler, n. e. cor.	High	Single	6	56
1778	Sibley, between Third and Fourth	Low	Double	6	57
1779	Lawson and Greenbrier, n. w. cor.	High	Single	6	42
1780	Lawson and Walsh, n. w. cor.	High	Single	6	48
1781	Lawson and Weide, n. w. cor.	High	Single	6	47
1782	Lawson and Mendota, n. w. cor.	High	Single	6	47

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE	DOUBLE OR SINGLE STREAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1783	Raymond and Tainter, n. w. cor.....	High.....	Single.....	6	37
1784	Maryland and Arcade, n. w. cor.....	High.....	Single.....	6	44
1785	Maryland and Weide, n. w. cor.....	High.....	Single.....	6	46
1786	Maryland and Walsh, n. w. cor.....	High.....	Single.....	6	45
1787	Maryland and Greenbrier, n. w. cor.....	High.....	Single.....	6	44
1788	Maryland and Edgerton, n. e. cor.....	High.....	Single.....	6	36
1789	Erie and Clay, n. w. cor.....	Low.....	Single.....	6	35
1790	Erie and Grace, n. w. cor.....	Low.....	Single.....	6	33
1791	Erie and St. Clair, s. w. cor.....	Low.....	Single.....	6	31
1792	Forrest, 200 feet south of Wells.....	High.....	Double.....	6	63
1793	Congress and Kansas City Railway.....	Low.....	Single.....	4	50
1794	Avon and Martin, s. w. cor.....	High.....	Single.....	4	49
1795	Wacouta and Sixth, s. w. cor.....	Low.....	Double.....	6	49
1796	Linwood and Grotto, n. e. cor.....	High.....	Single.....	6	34
1797	Ashland and Chatsworth, n. e. cor.....	High.....	Single.....	6	32
1798	Stinson and Western, n. e. cor.....	High.....	Single.....	6	49
1799	Third, at west end of bridge.....	Low.....	Double.....	12	69
1800	Minnehaha and Rivoli, n. e. cor.....	High.....	Single.....	6	59
1801	Linden, head of Glencoe.....	High.....	Single.....	6	41
1802	Linden and Arch, s. w. cor.....	High.....	Single.....	6	53
1803	Concord and Curtis.....	Low.....	Single.....	12	67
1804	Concord, 400 feet north of Curtis.....	Low.....	Double.....	12	68
1805	Concord and Page, n. e. cor.....	Low.....	Double.....	12	69
1806	Concord and Witham, n. e. cor.....	Low.....	Single.....	12	66
1807	Concord and Hoyt, n. w. cor.....	Low.....	Single.....	12	64
1808	Winslow and Prospect Terrace, s. w. cor.....	Low.....	Single.....	6	21
1809	Duluth and C., St. P., M. & O. Ry.....	High.....	Single.....	6	56
1810	Jessamine and Rice, n. e. cor.....	High.....	Single.....	6	57
1811	Jessamine and Sylvan, n. w. cor.....	High.....	Single.....	6	46
1812	Winnipeg and Sylvan, n. w. cor.....	High.....	Single.....	6	61
1813	Aurora and Chatsworth, n. e. cor.....	High.....	Single.....	6	48
1814	John and Eighth, s. e. cor.....	Low.....	Single.....	4	46
1815	Olive and Sixth, n. e. cor.....	Low.....	Single.....	4	48
1816	Jessamine and Park avenue, n. w. cor.....	High.....	Single.....	6	54
1817	Winnipeg and Park avenue, n. w. cor.....	High.....	Single.....	6	62
1818	Winnipeg and Rice, n. e. cor.....	High.....	Single.....	6	63
1819	Winslow and Delos, s. w. cor.....	Low.....	Single.....	6	22
1820	Audubon and Drake, n. w. cor.....	Low.....	Single.....	6	41
1821	University and Ashton.....	High.....	Single.....	16	82
1822	View and James, n. w. cor.....	Low.....	Single.....	6	30
1823	View and Palace, s. w. cor.....	Low.....	Single.....	6	30
1824	Dooley and Raymond, n. e. cor.....	High.....	Single.....	6	21
1825	Capitol and Fairview, n. e. cor.....	High.....	Single.....	6	32
1826	Erie and Jefferson, s. w. cor.....	Low.....	Single.....	6	37
1827	Erie and Cascade, n. w. cor.....	Low.....	Single.....	6	39
1828	Hewitt and Syndicate, n. w. cor.....	High.....	Single.....	6	27
1829	Nugent and C., M. & St. P. Ry.....	Low.....	Single.....	6	40
1830	Pleasant and Lawton, s. e. cor.....	Low.....	Single.....	6	22
1831	Pleasant and Goodrich, s. e. cor.....	Low.....	Single.....	6	18
1832	Pine and Eighth, s. e. cor.....	Low.....	Single.....	4	45
1833	Langford and Knapp.....	High.....	Single.....	12	38
1834	Langford and Gordon, n. w. cor.....	High.....	Single.....	12	36
1835	Langford and Dooley, n. e. cor.....	High.....	Single.....	12	36
1836	Gordon and Dooley, s. w. cor.....	High.....	Single.....	6	32
1837	Carter and Gordon.....	High.....	Single.....	6	30
1838	Carter and Keston, n. w. cor.....	High.....	Single.....	6	20
1839	Carter, 400 feet east of Keston.....	High.....	Single.....	6	19
1840	Carter and County Road, n. w. cor.....	High.....	Single.....	6	27
1841	Keston and Dooley, n. w. cor.....	High.....	Single.....	6	21
1842	Keston and Doswell, s. w. cor.....	High.....	Single.....	6	25
1843	Selby and Saratoga, n. w. cor.....	High.....	Single.....	6	24
1844	Selby and Pascal, under bridge.....	High.....	Single.....	6	25
1845	Selby and Albert, under bridge.....	High.....	Single.....	6	26
1846	Selby and Hamline, n. e. cor.....	High.....	Single.....	6	27
1847	Selby and Syndicate, n. e. cor.....	High.....	Single.....	6	26
1848	L'Orient and Minnehaha, s. w. cor.....	Low.....	Single.....	6	34
1849	Hope and Francis, s. w. cor.....	High.....	Single.....	6	43
1850	Selby and Griggs, n. e. cor.....	High.....	Single.....	6	27



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1851	Selby and Dunlap, n. e. cor.	High	Single	6	29
1852	Selby and Lexington, n. e. cor.	High	Single	6	37
1853	Robert and Sixth, s. w. cor.	Low	Double	6	46
1854	Robert and Fifth, n. w. cor.	Low	Double	6	46
1855	Minnesota and Fifth, s. e. cor.	Low	Double	6	44
1856	Minnesota and Sixth, s. e. cor.	Low	Double	6	44
1857	Marshall and Milton, n. e. cor.	High	Single	12	35
1858	Marshall and Chatsworth, n. e. cor.	High	Single	12	39
1859	Marshall and Oxford, n. e. cor.	High	Single	12	48
1860	Earl and York, s. w. cor.	High	Single	16	57
1861	Earl and Sims, s. w. cor.	High	Single	16	50
1862	Earl and Case, s. w. cor.	High	Single	16	43
1863	Earl and Jenks, s. w. cor.	High	Single	16	40
1864	Earl and Lawson, s. w. cor.	High	Single	16	39
1865	Earl and Cook, s. w. cor.	High	Single	16	37
1866	Cedar and Fifth, n. w. cor.	Low	Double	12	42
1867	Cedar and Sixth, n. w. cor.	Low	Double	12	42
1868	Como and Park avenue, n. w. cor.	High	Single	16	50
1869	Lytton Place and Park avenue, n. w. cor.	High	Single	6	63
1870	Lytton Place and Stellar, n. w. cor.	High	Single	6	62
1871	Lytton Place and Sylvan, n. w. cor.	High	Single	6	61
1872	State and Louisa, s. w. cor.	Low	Single	16	36
1873	State and Elizabeth, s. w. cor.	Low	Single	16	28
1874	State and Bunker, n. w. cor.	Low	Single	16	20
1875	Bradley, 200 feet south of Seventh	Low	Single	6	52
1876	Dearborn and Gorman, n. e. cor.	Low	Single	6	19
1877	Summit and Syndicate, n. w. cor.	High	Single	12	24
1878	Summit and Hamline, n. w. cor.	High	Single	12	21
1879	Summit and Albert, n. e. cor.	High	Single	12	23
1880	Syndicate and Grand, n. w. cor.	High	Single	6	23
1881	Lincoln and C. M. & St. P. Ry.	High	Single	6	30
1882	Lincoln and Syndicate, n. w. cor.	High	Single	6	28
1883	Lincoln and Hamline, n. e. cor.	High	Single	6	24
1884	Wells and Edgerton, n. e. cor.	High	Single	6	72
1885	Wells and Greenbrier, n. w. cor.	High	Single	6	55
1886	Norton and Como Boulevard, n. w. cor.	High	Single	6	42
1887	Seventh and Birmingham, n. w. cor.	High	Single	16	50
1888	Seventh and Flandrau, n. w. cor.	High	Single	16	10
1889	White Bear and Seventh, n. w. cor.	High	Single	12	20
1890	White Bear and Harvester, s. w. cor.	High	Single	12	22
1891	White Bear and LaCrosse	High	Single	12	19
1892	White Bear and Ames. This hydrant was made in St. Paul, and placed in service in the year 1892, n. w. cor.	High	Single	12	18
1893	Stillwater and Flandrau, s. w. cor.	High	Single	6	28
1894	Flandrau and Harvester, n. w. cor.	High	Single	6	34
1895	Page and State, n. w. cor.	W. S., High	Single	16	92
1896	Page and Mt. Hope, n. e. cor.	W. S., High	Single	6	81
1897	Page and Harvard, n. w. cor.	W. S., High	Single	6	79
1898	Bunker and Harvard, n. w. cor.	W. S., High	Single	6	87
1899	Bunker and Mt. Hope, n. e. cor.	W. S., High	Single	6	82
1900	Oakdale and Bunker, n. w. cor.	W. S., High	Single	6	86
1901	Oakdale and Page, n. w. cor.	W. S., High	Single	6	81
1902	Morton and Robert, n. w. cor.	W. S., High	Single	16	86
1903	Morton and Livingston, n. w. cor.	W. S., High	Single	16	75
1904	Morton and Gorman, n. w. cor.	W. S., High	Single	16	74
1905	Morton and Goff, n. w. cor.	W. S., High	Single	16	73
1906	Morton and Winslow, n. w. cor.	W. S., High	Single	16	74
1907	Robert and Page, n. w. cor.	W. S., High	Single	16	86
1908	Robert and Tyler, n. w. cor.	W. S., High	Single	16	85
1909	Bidwell and Morton, n. w. cor.	W. S., High	Single	16	74
1910	Stryker and Tyler, n. w. cor.	W. S., High	Single	6	62
1911	Stryker and Page	W. S., High	Single	6	68
1912	Stryker and Morton, n. w. cor.	W. S., High	Single	6	76
1913	Stryker and Augusta, s. w. cor.	W. S., High	Single	6	79
1914	Hall and Morton, n. w. cor.	W. S., High	Single	6	74
1915	Hall and Augusta, s. w. cor.	W. S., High	Single	6	77
1916	Hall and Elizabeth, s. w. cor.	W. S., High	Single	6	78



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1917	Baker and Bidwell, n. w. cor.	W. S., High	Single	12	77
1918	Baker and Bellows, n. w. cor.	W. S., High	Single	12	75
1919	Baker and Waseca, n. w. cor.	W. S., High	Single	12	69
1920	Baker and Charlton, n. w. cor.	W. S., High	Single	12	63
1921	Baker and Manomin, n. w. cor.	W. S., High	Single	12	50
1922	Baker and Smith, n. w. cor.	W. S., High	Single	12	49
1923	Baker and Ottawa, n. w. cor.	W. S., High	Single	12	46
1924	Ohio and Winona, n. w. cor.	W. S., High	Single	6	32
1925	Ohio and Belmont, n. w. cor.	W. S., High	Single	6	37
1926	Ohio and Sidney, n. w. cor.	W. S., High	Single	6	45
1927	Ohio and Page, n. w. cor.	W. S., High	Single	6	47
1928	Ohio and Morton, n. w. cor.	W. S., High	Single	6	51
1929	Ohio and Baker, n. w. cor.	W. S., High	Single	6	57
1930	Ohio and King, n. w. cor.	W. S., High	Single	6	62
1931	Ohio and Stevens, n. w. cor.	W. S., High	Single	6	66
1932	Ohio and George, n. w. cor.	W. S., High	Single	6	72
1933	Ohio and Robie, n. w. cor.	W. S., High	Single	6	79
1934	Ohio and Winnifred, n. w. cor.	W. S., High	Single	6	83
1935	George and Charlton, n. w. cor.	W. S., High	Single	6	68
1936	George and Seminole.	W. S., High	Single	6	71
1937	Orleans and Cherokee, s. w. cor.	W. S., High	Single	6	69
1938	Orleans and Robie, n. w. cor.	W. S., High	Single	6	68
1939	Orleans and George, n. w. cor.	W. S., High	Single	6	65
1940	Orleans and Stevens, n. w. cor.	W. S., High	Single	6	62
1941	Orleans and King, n. w. cor.	W. S., High	Single	6	54
1942	Orleans and Baker, n. w. cor.	W. S., High	Single	6	51
1943	Orleans and Morton, n. w. cor.	W. S., High	Single	6	47
1944	Orleans and Page, n. w. cor.	W. S., High	Single	6	44
1945	Manomin and Morton, n. w. cor.	W. S., High	Single	12	46
1946	Manomin and Page, n. w. cor.	W. S., High	Single	12	43
1947	Manomin and Sidney, n. w. cor.	W. S., High	Single	12	39
1948	Manomin and Belmont, n. w. cor.	W. S., High	Single	12	35
1949	Manomin and Winona, n. w. cor.	W. S., High	Single	12	30
1950	Manomin and Anapolis, n. w. cor.	W. S., High	Single	12	19
1951	George and Waseca, n. w. cor.	W. S., High	Single	6	73
1952	George and Manomin, n. w. cor.	W. S., High	Single	6	65
1953	Cherokee and Baker, s. w. cor.	W. S., High	Single	6	45
1954	Cherokee and Morton, n. w. cor.	W. S., High	Single	6	34
1955	Cherokee and Page, n. w. cor.	W. S., High	Single	6	34
1956	Cherokee and Sidney, n. w. cor.	W. S., High	Single	6	27
1957	Cherokee and Belmont, n. w. cor.	W. S., High	Single	6	23
1958	Cherokee and Winona, n. w. cor.	W. S., High	Single	6	22
1959	Cherokee and Wyoming, n. w. cor.	W. S., High	Single	6	21
1960	Cherokee and Anapolis, n. w. cor.	W. S., High	Single	6	18
1961	Sidney and Ottawa, n. w. cor.	W. S., High	Single	6	32
1962	Hazel and Ames.	High	Single	12	22
1963	Hazel, 300 feet north of Ames.	High	Single	12	18
1964	Cherokee and Smith avenue, s. w. cor.	W. S., High	Single	6	67
1965	Cherokee and Ottawa, s. e. cor.	W. S., High	Single	6	60
1966	Cherokee and Stevens, n. w. cor.	W. S., High	Single	6	51
1967	Cherokee and King.	W. S., High	Single	6	47
1968	Macalester and Grand, n. w. cor.	High	Single	6	28
1969	Manomin and Wyoming, n. w. cor.	W. S., High	Single	12	24
1970	Harrison and Lawton, n. e. cor.	Low	Single	6	39
1971	E. Fourth and Cypress, n. w. cor.	High	Single	6	42
1972	E. Fourth and Earl, n. w. cor.	High	Single	6	56
1973	Fairview and Capitol Place, s. w. cor.	High	Single	12	31
1974	Minnehaha and Fairview, n. w. cor.	High	Single	12	38
1975	Minnehaha and Capitol, n. w. cor.	High	Single	12	29
1976	Tatum and Minnehaha, n. w. cor.	High	Single	6	32
1977	Tatum and Chelton, s. w. cor.	High	Single	6	35
1978	Tatum and Chelton, n. w. cor.	High	Single	6	36
1979	Chelton and Pusey, n. w. cor.	High	Single	6	35
1980	Chelton and Prior, n. e. cor.	High	Single	6	34
1981	Dawson and Gotzian, n. w. cor.	High	Single	6	49
1982	Dawson and Terry, n. w. cor.	High	Single	6	65
1983	Dawson and Cypress, n. e. cor.	High	Single	6	46
1984	St. Clair and Cliff, n. w. cor.	Low	Single	6	38

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
1985	St. Clair and Ann, n. w. cor.....	Low .....	Single.....	6	39
1986	Fauquier and Greenbrier, n. e. cor.....	High.....	Single.....	6	70
1987	Fauquier and Walsh, n. e. cor.....	High.....	Single.....	6	65
1988	Fairview, west end of Edmund.....	High.....	Single.....	12	38
1989	Fairview, west end of Thomas.....	High.....	Single.....	12	36
1990	Fairview, west end of Lafond.....	High.....	Single.....	12	34
1991	Fairview, west end of Blair.....	High.....	Single.....	12	33
1992	Fairview, west end of Van Buren.....	High.....	Single.....	12	32
1993	Grand and C. M. & St. P. R. R., west end.....	High.....	Single.....	6	28
1994	Wells and Weide, n. w. cor.....	High.....	Single.....	6	43
1995	Wells and Walsh, S. S. R. Wall.....	High.....	Single.....	4	58
1996	Wells and Greenbrier, S. S. R. Wall.....	High.....	Single.....	4	65
1997	Arlington, 100 feet north of Greenbrier.....	High.....	Single.....	4	73
1998	James and Warsaw, n. e. cor.....	Low .....	Single.....	6	33
1999	University and Pelham.....	High.....	Single.....	12	46
2000	University and Cromwell, n. e. cor.....	High.....	Single.....	12	48
2001	Jenks and Greenbrier, n. w. cor.....	High.....	Single.....	6	48
2002	Jenks and Walsh, n. w. cor.....	High.....	Single.....	6	35
2003	Jenks and Weide, n. w. cor.....	High.....	Single.....	6	43
2004	Marshall and Moore, n. w. cor.....	High.....	Single.....	12	45
2005	Marshall and Wilder, n. w. cor.....	High.....	Single.....	12	46
2006	Marshall and Cleveland, n. e. cor.....	High.....	Single.....	12	47
2007	Jessie and Granum, s. w. cor.....	High.....	Single.....	6	30
2008	Jessie and Rose, s. w. cor.....	High.....	Single.....	6	34
2009	Jessie and Maryland, s. w. cor.....	High.....	Single.....	6	35
2010	Cleveland and Selby, n. w. cor.....	High.....	Single.....	12	45
2011	Cleveland and Laurel, n. w. cor.....	High.....	Single.....	12	46
2012	Maryland and DeSoto, n. e. cor.....	High.....	Single.....	6	55
2013	Maryland and Burr, n. e. cor.....	High.....	Single.....	6	54
2014	Maryland and Bradley, n. e. cor.....	High.....	Single.....	6	45
2015	Dayton and Lexington, n. e. cor.....	High.....	Single.....	6	37
2016	Warsaw and Palace, s. w. cor.....	Low .....	Single.....	6	32
2017	Dayton and Dunlap, n. e. cor.....	High.....	Single.....	6	29
2018	Dayton and Griggs, n. e. cor.....	High.....	Single.....	6	28
2019	Argyle and Hatch, s. w. cor.....	High.....	Single.....	4	24
2020	McMenemy and Magnolia, n. w. cor.....	High.....	Single.....	12	51
2021	Como boulevard, 350 feet north of Horton.....	High.....	Single.....	6	61
2022	McMenemy and Jenks, n. w. cor.....	High.....	Single.....	12	59
2023	McMenemy and Lawson, n. w. cor.....	High.....	Single.....	12	56
2024	McMenemy and Cook, n. w. cor.....	High.....	Single.....	12	76
2025	Cook, 125 feet east of Mississippi.....	High.....	Single.....	6	43
2026	Cook and Arkwright, n. w. cor.....	High.....	Single.....	6	49
2027	Lawson and Arkwright, n. w. cor.....	High.....	Single.....	6	79
2028	Lawson, 125 feet east of Mississippi.....	High.....	Single.....	6	51
2029	Cleveland and Ashland.....	High.....	Single.....	12	50
2030	Cleveland and Leslie.....	High.....	Single.....	12	48
2031	Cleveland and Summit, n. w. cor.....	High.....	Single.....	12	48
2032	Cleveland and Summit, s. w. cor.....	High.....	Single.....	12	44
2033	Cleveland and Grand, n. w. cor.....	High.....	Single.....	6	35
2034	Jenks and Arkwright.....	High.....	Single.....	6	72
2035	Magnolia, 125 feet east of Mississippi.....	High.....	Single.....	6	46
2036	Magnolia and Woodland, n. w. cor.....	High.....	Single.....	6	45
2037	Magnolia and Arkwright, n. w. cor.....	High.....	Single.....	6	53
2038	Burr and Rose, n. w. cor.....	High.....	Single.....	6	51
2039	Burr and Brainerd, s. w. cor.....	High.....	Single.....	6	86
2040	Poplar and N. P. Yard.....	High.....	Single.....	6	81
2041	Poplar and Agate, n. w. cor.....	High.....	Single.....	6	55
2042	Grand and Finn, n. e. cor.....	High.....	Single.....	6	58
2043	Grand and Cretin, n. e. cor.....	High.....	Single.....	6	54
2044	Rondo and Fairview, n. w. cor.....	High.....	Single.....	12	78
2045	S. Robert and Curtis, n. w. cor.....	W. S., High.....	Single.....	12	73
2046	S. Robert and Belvidere, n. w. cor.....	W. S., High.....	Single.....	6	69
2047	Belvidere and Riverview, n. w. cor.....	W. S., High.....	Single.....	6	65
2048	Belvidere and Oakdale, n. w. cor.....	W. S., High.....	Single.....	4	34
2049	Churchill and Hatch, s. w. cor.....	High.....	Single.....	4	33
2050	Churchill and Orchard, s. w. cor.....	High.....	Single.....	4	33
2051	Churchill and N. P. R. R.....	High.....	Single.....	4	33
2052	Bunker and Brown, n. w. cor.....	W. S., High.....	Single.....	6	104

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT
2053	Bunker and Woodbury, n. w. cor.....	W. S., High	Single.....	6	
2054	Delos and Bidwell, n. w. cor.....	Low.....	Single.....	6	
2055	Delos and Bellows, n. e. cor.....	Low.....	Single.....	6	
2056	Rosabel and Sixth, s. e. cor.....	Low.....	D. S.....	6	
2057	Rosabel and Fifth, s. w. cor.....	Low.....	D. S.....	6	
2058	Fourth and Rosabel, n. e. cor.....	Low.....	D. S.....	6	
2059	St. Peter and Wabasha, s. w. cor.....	High.....	D. S.....	6	
2060	University and Dunlap, n. e. cor.....	High.....	Single.....	20	
2061	Marshall, 300 feet west of Cleveland.....	High.....	Single.....	12	
2062	Albemarle and Atwater, n. w. cor.....	High.....	Single.....	4	
2063	Wayzata and Albemarle, n. e. cor.....	High.....	Single.....	6	
2064	George and Winslow, n. e. cor.....	W. S., High	Single.....	6	
2065	George and Bidwell, n. e. cor.....	W. S., High	Single.....	6	
2066	Magnolia and Cypress, n. w. cor.....	High.....	Single.....	6	
2067	Warsaw and Randolph, n. w. cor.....	Low.....	Single.....	6	
2068	Bay and Juno, s. w. cor.....	Low.....	Single.....	6	
2069	Franklin and Eagle, s. w. cor.....	Low.....	Single.....	4	
2070	McLean and Cypress, n. e. cor.....	High.....	Single.....	6	
2071	Jenks and Mendota, n. w. cor.....	High.....	Single.....	6	
2072	Jenks and Forrest, n. w. cor.....	High.....	Single.....	6	
2073	Mississippi and Geranium, s. w. cor.....	Low.....	Single.....	6	
2074	Prior and Selby, n. w. cor.....	High.....	Single.....	6	
2075	Selby and Ames, n. w. cor.....	High.....	Single.....	6	
2076	Eve green and Lexington, n. e. cor.....	High.....	Single.....	6	
2077	Churchill and VanSlyke, s. w. cor.....	High.....	Single.....	6	
2078	Churchill and McKenty, n. w. cor.....	High.....	Single.....	6	
2079	Cro s and Churchill, n. e. cor.....	High.....	Single.....	6	
2080	Chatsworth and VanSlyke.....	High.....	Single.....	6	
2081	Chatsworth and Union.....	High.....	Single.....	6	
2082	Chatsworth and McKenty, n. w. cor.....	High.....	Single.....	6	
2083	Argyle and McKenty, n. w. cor.....	High.....	Single.....	6	
2084	Work House, n. w. cor.....	High.....	Single.....	6	
2085	W rk House, s. w. cor.....	High.....	Single.....	6	
2086	Cleveland and Lincoln, n. w. cor.....	High.....	Single.....	12	
2087	Lincoln and Finn, n. e. cor.....	High.....	Single.....	6	
2088	Summit ave and Cambridge, s. w. cor.....	High.....	Single.....	6	
2089	Summit and Baldwin, s. e. cor.....	High.....	Single.....	6	
2090	DeSoto and C., St. P. M. & O., s. w. cor.....	High.....	Single.....	6	
2091	Mt. Ida and DeSoto, n. w. cor.....	Low.....	Single.....	12	
2092	Waverly and John, s. e. cor.....	Low.....	Single.....	6	
2093	Somerset and Olive, s. e. cor.....	Low.....	Single.....	6	
2094	Lawson and Park ave, n. w. cor.....	High.....	Single.....	6	
2095	Lawson and Sylvan, n. w. cor.....	High.....	Single.....	6	
2096	Somerset and Pine, s. e. cor.....	Low.....	Single.....	6	
2097	Ashland and Oxford, n. e. cor.....	High.....	Single.....	6	
2098	Hardenberg Place, 190 feet N. of Sylvan.....	High.....	Single.....	4	
2099	George and Bidwell, n. w. cor.....	W. S., High	Single.....	6	
2100	George and Bellows, n. w. cor.....	W. S., High	Single.....	6	
2101	Juno and Victoria, n. e. cor.....	Low.....	Single.....	6	
2102	Juno and Milton, n. e. cor.....	Low.....	Single.....	6	
2103	Seventh and St. Peter, n. w. cor.....	Low.....	D. S.....	16	
2104	Seventh and Sixth, s. w. cor.....	Low.....	D. S.....	16	
2105	Minnehaha and Aldine, n. e. cor.....	High.....	Single.....	12	
2106	Minnehaha and Wheeler, n. e. cor.....	High.....	Single.....	12	
2107	Juno and Chatsworth, n. e. cor.....	Low.....	Single.....	6	
2108	Lawson and Forrest, n. w. cor.....	High.....	Single.....	6	
2109	Knapp and Chelmsford, n. w. cor.....	High.....	Single.....	6	
2110	Knapp and Raymond, n. w. cor.....	High.....	Single.....	6	
2111	Bradley, 236 ft. n. of Maryland.....	High.....	Single.....	6	
2112	Oakdale and Page, n. w. cor.....	W. S., High	Single.....	6	
2113	Oakdale and Curtis, n. w. cor.....	W. S., High	Single.....	6	
2114	Louisa and Gorman, n. e. cor.....	Low.....	Single.....	6	
2115	Louisa and Livingston, n. e. cor.....	Low.....	Single.....	6	
2116	Lexington and Sherburne, n. w. cor.....	High.....	Single.....	16	
2117	Charles and Lexington, n. w. cor.....	High.....	Single.....	6	
2118	Concord and Belvedere, n. e. cor.....	Low.....	Single.....	12	
2119	Baofil and Duke, n. e. cor.....	Low.....	Single.....	6	
2120	Belvedere and Stickney, n. w. cor.....	Low.....	Single.....	6	



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
2121	Belvedere and Waterloo, n. e. cor.	Low	Single	6	29
2122	Belvedere and Hoyt, n. e. cor.	Low	Single	6	19
2123	Belvedere and Andrew, n. e. cor.	Low	Single	6	12
2124	Burgess and Como, n. w. cor.	High	Single	6	50
2125	Selby and Fairview, n. e. cor.	High	Single	6	27
2126	Selby and Wheeler, n. w. cor.	High	Single	6	32
2127	Selby and Herschel, n. w. cor.	High	Single	6	33
2128	Selby and Aldine, n. w. cor.	High	Single	6	34
2129	Bradford and Wycliff, s. w. cor.	High	Single	6	44
2130	Bradford and Endicott, s. w. cor.	High	Single	6	44
2131	Iglehart and Wheeler, n. w. cor.	High	Single	6	32
2132	St. Peter and Sixth, n. e. cor.	Low	D. S.	6	33
2133	Washington and Sixth, n. w. cor.	Low	D. S.	12	33
2134	Washington and Fifth, s. e. cor.	Low	D. S.	12	33
2135	Washington and Fourth, n. e. cor.	Low	D. S.	12	33
2136	Lawson and Cypress, n. w. cor.	High	Single	6	43
2137	Cook and Farrar, n. w. cor.	High	Single	6	44
2138	Wacouta and Eighth, s. e. cor.	Low	D. S.	12	44
2139	Atlantic and Stillwater, s. w. cor.	High	D. S.	6	53
2140	Atlantic and C., St. P., M. & O., n. e. cor.	High	D. S.	6	53
2141	Atlantic and C., St. P., M. & O., s. w. cor.	High	Single	6	52
2142	Fairmount and Milton, n. e. cor.	High	Single	6	40
2143	East Fourth and Terry, n. w. cor.	High	Single	6	66
2144	Pacific and Cypress, n. e. cor.	High	Single	6	52
2145	Pacific and Hestor, n. w. cor.	High	Single	6	55
2146	Hague and Dunlap, n. e. cor.	High	Single	6	30
2147	Hague and Griggs, n. e. cor.	High	Single	6	24
2148	Simpson and Blair, n. w. cor.	High	Single	6	38
2149	Simpson and Van Buren, n. w. cor.	High	Single	6	27
2150	Ellis and Seal, n. w. cor.	High	Single	6	24
2151	Summit and Frey, n. w. cor.	High	Single	12	30
2152	Macalester and Lincoln, s. w. cor.	High	Single	6	20
2153	Macalester and Princeton, n. w. cor.	High	Single	6	22
2154	Princeton, head of Vernon.	High	Single	6	25
2155	Princeton and Baldwin, n. e. cor.	High	Single	6	30
2156	Cambridge and Amherst, n. w. cor.	High	Single	6	28
2157	Lincoln and Cambridge, n. w. cor.	High	Single	6	29
2158	Lincoln and Baldwin, n. e. cor.	High	Single	6	30
2159	Sixth street, between Cedar and Minnesota, south side	Low	D. S.	8	44
2160	Sixth street, between Minnesota and Rob- ert, north side	Low	D. S.	8	45
2161	Sixth street, between Robert and Jack- son, south side	Low	D. S.	8	46
2162	Jefferson and Warsaw, n. w. cor.	Low	Single	12	32
2163	Arbor and Jefferson, n. w. cor.	Low	Single	6	31
2164	Arbor and Grace, s. w. cor.	Low	Single	6	30
2165	Sixth and Sibley, s. e. cor.	Low	D. S.	8	47
2166	Third and Pleasant, n. e. cor.	High	Single	6	88
2167	St. Peter and Ninth, n. w. cor.	Low	D. S.	6	33
2168	St. Peter and Exchange, n. w. cor.	Low	D. S.	6	31
2169	Blair and Wheeler, n. w. cor.	High	Single	6	27
2170	Blair and Aldine, n. w. cor.	High	Single	6	28
2171	St. Peter and Tenth, n. w. cor.	Low	D. S.	6	27
2172	Wabasha and Tenth, s. w. cor.	Low	D. S.	6	29
2173	Pennsylvania and Park, n. w. cor.	High	Single	4	72
2174	Exchange and Wabasha, n. e. cor.	Low	D. S.	6	31
2175	Jenks and N. P. yard.	High	Single	6	87
2176	Jenks and Agate, n. w. cor.	High	Single	6	80
2177	Fifth, bet. Rosabel and Wakouta, north side	Low	D. S.	12	54
2178	Fifth, bet. Sibley and Jackson, north side	Low	D. S.	12	49
2179	Fifth, bet. Jackson and Robert, north side	Low	D. S.	12	47
2180	Fifth, bet. Robert and Minnesota, north side	Low	D. S.	12	45
2181	Fifth, bet. Minnesota and Cedar, north side	Low	D. S.	12	45
2182	Wakouta, 220 feet south of Third, west side	Low	Single	6	68
2183	Rosabel and Third, s. e. cor.	Low	D. S.	6	64
2184	Rosabel, 224 feet south of Third, west side	Low	D. S.	6	68
2185	Fairview street, bet. Arch and Mt. Airy	High	Single	6	53

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	SERVICE.	DOUBLE OR SINGLE STEAMER.	SIZE OF PIPE.	PRESSURE AT HYDRANT.
2186	Wakouts, bet. Fourth and Fifth, west side..	Low .....	D. S.....	12	55
2187	Broadway and Sixth, n. e. cor.....	Low .....	D. S.....	10	48
2188	Robert, bet. Sixth and Seventh, east side.....	Low .....	D. S.....	6	45
2189	Robert, bet. Fourth and Fifth, west side.....	Low .....	D. S.....	6	45
2190	Jackson, bet. Third and Fourth, east side ..	Low .....	D. S.....	12	52
2191	Grand and Cambridge, n. e. cor.....	High .....	Single .....	6	30
2192	Grand and Baldwin, n. e. cor.....	High .....	Single .....	6	31
2193	Curtis and Mt. Hope, n. e. cor.....	W. S., High .....	Single .....	6	76
2194	Curtis and Harvard, n. w. cor.....	W. S., High .....	Single .....	6	74
2195	Curtis and Woodbury, n. w. cor.....	W. S., High .....	Single .....	6	74
2196	Curtis, 250 feet east of Woodbury, n. side...	W. S., High .....	Single .....	6	75
2197	Fourth and St. Peter, s. e. cor.....	Low .....	Double.....	6	32
2198	St. Peter, bet. Fourth and Fifth, west side...	Low .....	Double.....	6	32
2199	St. Peter, bet. Fifth and Sixth, east side....	Low .....	Double.....	6	33
2200	Fifth, bet. Wabasha and St. Peter, n. side....	Low .....	Double.....	6	33
Number of fire hydrants placed this year on low service.....					84
Number of fire hydrants placed this year on high service.....					31
Number of fire hydrants placed this year on West Side high service.....					4
Total number placed this year .....					69
Total number placed to date on low service .....					759
Total number placed to date on high service.....					1,353
Total number placed to date on high service, West Side.....					88
Grand Total.....					2,200

Of which 122 on low and 5 on high service are double steamers.

There are also 4 hydrants on the private property of the Northwestern Cordage Co., and 11 on the W. A. Wood Harvester Co.'s private property, and 3 at the N. P. shops, 1 at Yoerg's brewery; they are all duplicates of our standard and can be used in case of fire.



## LIST OF STREET SPRINKLING HYDRANTS.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.	NAME OF HYDRANT.
1	Sixth and Sibley.....	10 feet.....	Stand pipe
2	Fifth and Wacouta.....	7 feet.....	Stand pipe
3	Wacouta and Third.....	6 feet.....	Stand pipe
4	Port and Third.....	6 feet.....	Stand pipe
5	Third and Jackson.....	5 feet.....	Stand pipe
6	Minnesota and Third.....	5 feet.....	Stand pipe
7	Fifth and Robert.....	6 feet.....	Stand pipe
8	Robert and Seventh.....	7 feet.....	Stand pipe
9	Wacouta and Seventh.....	6 feet.....	Stand pipe
10	Ninth and Cedar.....	7 feet.....	Stand pipe
11	Eighth and Broadway.....	6 feet.....	Stand pipe
12	John and Seventh.....	6 feet.....	Stand pipe
13	Walnut and Seventh.....	5 feet.....	Stand pipe
14	Kittson and Seventh.....	8 feet.....	Stand pipe
15	Ninth and St. Peter.....	5 feet.....	Stand pipe
16	Pine and Tenth.....	9 feet east.....	Stand pipe
17	Pine and Grove.....	30 feet south.....	Stand pipe
18	Waverly and Westminster.....	3 feet.....	Stand pipe
19	Leech and Seventh.....	5 feet.....	Stand pipe
20	Broadway and Fourth.....	In tunnel.....	Stand pipe
21	Cedar and Seventh.....	7 feet.....	Stand pipe
22	College and Wabasha.....	8 feet.....	Stand pipe
23	College and Tenth.....	8 feet north.....	Stand pipe
24	Pleasant and Third.....	7 feet east.....	Stand pipe
25	St. Peter and Third.....	35 feet south.....	Stand pipe
26	Franklin and Fourth.....	7 feet west.....	Stand pipe
27	Goodrich and Robert.....	In tunnel.....	Stand pipe
28	Eleventh and Seventh.....	In tunnel.....	Stand pipe
29	Mt. Airy and Mississippi.....	16 feet.....	Stand pipe
30	Burr and Collins.....	4 feet.....	Stand pipe
31	Bradley and Woodward.....	6 feet.....	Stand pipe
32	Martin and Western.....	11 feet.....	Stand pipe
33	St. Albans and Portland.....	7 feet.....	Stand pipe
34	Portland and Summit.....	8 feet.....	Stand pipe
35	Laurel and Farrington.....	9 feet.....	Stand pipe
36	St. Clair and Seventh.....	31 feet.....	Stand pipe
37	Pleasant and Oakland.....	6 feet.....	Stand pipe
38	Mackubin and Selby.....	10½ feet.....	Stand pipe
39	Summit and Nelson.....	31 feet south.....	Stand pipe
40	Mackubin and Summit.....	32 feet east.....	Stand pipe
41	Dale and Marshall.....	28 feet.....	Stand pipe
42	Dale and Ashland.....	10 feet.....	Stand pipe
43	Dale and Grand.....	8 feet.....	Stand pipe
44	Marshall and Western.....	27 feet.....	Stand pipe
45	Rondo and Rice.....	10 feet.....	Stand pipe
46	Central and Wabasha.....	3 feet.....	Stand pipe
47	Mackubin and University.....	9 feet.....	Stand pipe
48	University and Rice.....	7½ feet.....	Stand pipe
49	Bates and Seventh.....	8 feet.....	Stand pipe
50	Hudson and Maria.....	8 feet.....	Stand pipe
51	Mendota and Fauquier.....	6 feet.....	Stand pipe
52	Oneida and Seventh.....	7 feet.....	Stand pipe
53	Third and Bates.....	8 feet.....	Stand pipe
54	Fifth and Maria.....	8 feet.....	Stand pipe
55	Chestnut and Franklin.....	8½ feet.....	Stand pipe
56	Twelfth and Jackson.....	8½ feet.....	Stand pipe
57	Wacouta and Tenth.....	35 feet.....	Stand pipe
58	Arundel and Holly.....	5 feet.....	Stand pipe
59	Sherman and Smith.....	29 feet south.....	Stand pipe
60	Cedar and Aurora.....	6 feet east.....	Stand pipe
61	Sixth and Wabasha.....	10 feet.....	Stand pipe
62	Eichenwald and Seventh.....	In tunnel.....	Stand pipe
63	Sinnen and Seventh.....	9 feet.....	Stand pipe

## LIST OF STREET SPRINKLING HYDRANTS—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.	NAME OF HYDRANT.
64	Reaney and Seventh.....	8 feet.....	Stand pipe
65	Earl and Seventh.....	6 feet.....	Stand pipe
66	Locust and Ninth.....	11 feet.....	Stand pipe
67	Walnut and Summit.....	52 feet.....	Stand pipe
68	Ninth and Fort.....	8 feet.....	Stand pipe
69	Grove and Canada.....	5 feet.....	Stand pipe
70	Mendota and Seventh.....	9 feet.....	Stand pipe
71	Jackson and Fourteenth.....	9 feet.....	Stand pipe
72	John and Fourth.....	6 feet.....	Stand pipe
73	Maple and Conway.....	8 feet.....	Stand pipe
74	Farrington and Carroll.....	20 feet.....	Stand pipe
75	Topping and Como.....	.....	.....
76	Viola and Grant.....	26 feet.....	Stand pipe
77	Capitol and Western.....	.....	.....
78	Acker and Mississippi.....	6 feet.....	Stand pipe
79	Payne and Minnehaha.....	11 feet.....	Stand pipe
80	Fairfield and South Wabasha.....	8½ feet.....	Stand pipe
81	Audubon and Seventh.....	8 feet.....	Stand pipe
82	Rice and Como.....	8 feet.....	Stand pipe
83	Rice and G. N. Ry.....	7 feet.....	Stand pipe
84	Williams and Pine.....	22 feet.....	Stand pipe
85	Olmsted and Olive.....	38 feet.....	Stand pipe
86	Neill and Fifth.....	12 feet west..... 36 feet south.....	Stand pipe
87	Canada and University.....	23 feet.....	Stand pipe
88	Warren and Valley.....	4 feet east..... 32 feet west.....	Stand pipe
89	Gaultier and University.....	7 feet east..... 34 feet south.....	Stand pipe
90	Virginia and University.....	3 feet east..... 33 feet south.....	Stand pipe
91	Farrington and Nelson.....	26 feet west.....	Stand pipe
92	Oakland and Floral.....	6 feet.....	Stand pipe
93	Mackubin and Iglehart.....	8 feet.....	Stand pipe
94	Acker and Blk.....	6 feet.....	Stand pipe
95	Summit and Cedar.....	35 feet.....	Stand pipe
96	Iglehart and St. Peter.....	28 feet.....	Stand pipe
97	Ninth and Jackson.....	29 feet north.....	Stand pipe
98	Sherman and Exchange.....	7 feet.....	Stand pipe
99	Summit Place and Iglehart.....	22 feet.....	Stand pipe
100	Summit Place and Martin.....	28 feet.....	Stand pipe
101	Jay and Fuller.....	8 feet.....	Stand pipe
102	Dale and University.....	8 feet.....	Stand pipe
103	St. Albans and Hague.....	7 feet.....	Stand pipe
104	Hoffman and Sixth.....	8 feet.....	Stand pipe
105	Hoffman and Cherry.....	10 feet.....	Stand pipe
106	River and Hoffman.....	10 feet.....	Stand pipe
107	University and Snelling.....	31 feet.....	Stand pipe
108	Carroll and Dale.....	5 feet.....	Stand pipe
109	St. Anthony and St. Albans.....	34 feet.....	Stand pipe
110	Dale and Selby.....	9 feet.....	Stand pipe
111	Farrington and Sherburne.....	7 feet.....	Stand pipe
112	Mackubin and Fuller.....	5 feet.....	Stand pipe
113	Mackubin and St. Anthony.....	9 feet.....	Stand pipe
114	Harrison and Garfield.....	10 feet.....	Stand pipe
115	Charles and Western.....	10 feet.....	Stand pipe
116	Marion and Charles.....	8 feet.....	Stand pipe
117	Granite and Mississippi.....	9 feet.....	Stand pipe
118	Sixth and Broadway.....	7 feet.....	Stand pipe
119	Minnehaha and Burr.....	13 feet north..... 26 feet east.....	Stand pipe
120	Bedford and Decatur.....	30 feet.....	Stand pipe
121	Burr and Hopkins.....	6 feet.....	Stand pipe
122	Maple and Hudson.....	7 feet.....	Stand pipe
123	Goodhue and Richmond.....	32 feet.....	Stand pipe
124	Duke and Seventh.....	7 feet.....	Stand pipe
125	Earl and Minnehaha.....	7 feet.....	Stand pipe
126	Arcade and Reaney.....	7 feet.....	Stand pipe

## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.	NAME OF HYDRANT.
127	Otsego and Lafayette.....	6 feet.....	Stand pipe
128	Cedar and Fifth.....	7 feet.....	Stand pipe
129	Grotto and Dayton.....	6 feet.....	Stand pipe
130	Grove and Monroe Place.....	5 feet.....	Stand pipe
131	Fanquier and Weide.....	9 feet.....	Stand pipe
132	Arundel and Rondo.....	9 feet.....	Stand pipe
133	Arcade and York.....	7 feet.....	Stand pipe
134	Broadway and Thirteenth.....	6 feet.....	Stand pipe
135	Robert and University.....	10 feet.....	Stand pipe
136	Como and Elfelt.....	10 feet.....	Stand pipe
137	Congress and Robert.....	8 feet.....	Stand pipe
138	Lee and Bay.....	9 feet.....	Stand pipe
139	Pillmore and Robert.....	7 feet.....	Stand pipe
140	Grotto and Grand.....	6 feet.....	Stand pipe
141	Robert and Wood.....	9 feet.....	Stand pipe
142	Anita and Concord.....	7 feet.....	Stand pipe
143	Robie and Concord.....	37 feet.....	Stand pipe
144	Keane and Greenbrier.....	8 feet.....	Stand pipe
145	Victoria and Summit.....	43 feet south.....	Stand pipe
146	Wabasha south of Channel.....	8 feet.....	Stand pipe
147	Isabel and South Wabasha.....	6 feet.....	Stand pipe
148	Chicago and Robert.....	8 feet.....	Stand pipe
149	Sherburne and Park.....	3 feet.....	Stand pipe
150	Virginia and Rondo.....	7 feet.....	Stand pipe
151	Front and Dale.....	5 feet.....	Stand pipe
152	Lafond and Western.....	8 feet.....	Stand pipe
153	Front and Rice.....	6 feet.....	Stand pipe
154	Kent and Laurel.....	4 feet.....	Stand pipe
155	Grotto and Holly.....	6 feet.....	Stand pipe
156	Western and Goodrich.....	8 feet.....	Stand pipe
157	Cook and Payne.....	7 feet.....	Stand pipe
158	York and Payne.....	6 feet.....	Stand pipe
159	University and Victoria.....	28 feet.....	Stand pipe
160	University and Lexington.....	28 feet.....	Stand pipe
161	Third and John.....	10 feet.....	Stand pipe
162	Tuscarora and Seventh.....	7 feet.....	Stand pipe
163	Elfelt and Edmund.....	8 feet.....	Stand pipe
164	Mackubin and Edmund.....	9 feet.....	Stand pipe
165	Dale and Martin.....	8 feet.....	Stand pipe
166	Whitall and Burr.....	31 feet.....	Stand pipe
167	Mississippi and Case.....	9 feet.....	Stand pipe
168	Mississippi and Jessamine.....	7 feet.....	Stand pipe
169	University and Hamline.....	28 feet.....	Stand pipe
170	Taylor and Snelling.....	9 feet.....	Stand pipe
171	Van Buren and Snelling.....	7 feet.....	Stand pipe
172	Prior and Oakley.....	31 feet.....	Stand pipe
173	St. Anthony and Terrace Park avenue.....	30 feet.....	Stand pipe
174	Iglehart and Prior.....	5 feet.....	Stand pipe
175	Jackson and Arch.....	30 feet.....	Stand pipe
176	Grotto and Carroll.....	9 feet.....	Stand pipe
177	Franklin and Sixth.....	4 feet.....	Stand pipe
178	Duluth and Seventh.....	8 feet.....	Stand pipe
179	Cypress and Euclid.....	8 feet.....	Stand pipe
180	State and Tennessee.....	31 feet south..... 12 feet east.....	Stand pipe
181	Osceola and Pleasant.....	7 feet.....	Stand pipe
182	Raymond and Hampden Park.....	14 feet.....	Stand pipe
183	Raymond and University.....	7 feet.....	Stand pipe
184	University and Pillsbury.....	21 feet.....	Stand pipe
185	Raymond and Gordon.....	35 feet.....	Stand pipe
186	Lexington and Van Slyke.....	35 feet.....	Stand pipe
187	Fairview and University.....	11 feet.....	Stand pipe
188	Chatsworth and University.....	6 feet.....	Stand pipe
189	Grotto and Sherburne.....	7 feet.....	Stand pipe
190	Whitall and Edgerton.....	30 feet.....	Stand pipe
191	Edgerton and Jenks.....	31 feet.....	Stand pipe
192	Snelling and Summit.....	25 feet.....	Stand pipe
193	Indiana and Hyde.....	7 feet.....	Stand pipe

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## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.	NAME OF HYDRANT.
194	Dale and Charles.....	4 feet.....	Stand pipe
195	Mt. Hope and Prescott.....	75 feet north.....	Stand pipe
196	Geranium and Edgerton.....	7 feet west.....	Stand pipe
197	Jessamine and Greenbrier.....	33 feet.....	Stand pipe
198	Case and Burr.....	30 feet.....	Stand pipe
199	Victoria and Goodrich.....	8 feet.....	Stand pipe
200	Grotto and Goodrich.....	39 feet south.....	Stand pipe
201	Dale and Goodrich.....	9 feet west.....	Stand pipe
202	Cliff and Goodhue.....	32 feet.....	Stand pipe
203	Midway and Woodbury.....	38 feet.....	Stand pipe
204	Concord and Andrew.....	23 feet.....	Stand pipe
205	Greenbrier and Case.....	8 feet.....	Stand pipe
206	York and DeSoto.....	6 feet.....	Stand pipe
207	Westminster and Lookout Place.....	31 feet.....	Stand pipe
208	Mound and Hastings.....	10 feet.....	Stand pipe
209	Carroll and Arundel.....	6 feet.....	Stand pipe
210	Daly and James.....	7 feet.....	Stand pipe
211	Minnehaha and Hope.....	10 feet.....	Stand pipe
212	Randolph and Fulton.....	30 feet.....	Stand pipe
213	McBoal and Smith avenue.....	8 feet.....	Stand pipe
214	Congress and State.....	8 feet.....	Stand pipe
215	Millford and Rice.....	28 feet.....	Stand pipe
216	Sycamore and Jackson.....	22 feet.....	Stand pipe
217	Minnehaha and Dale.....	26 feet south.....	Stand pipe
218	Fourth and St. Paul & Duluth Ry.....	6 feet east.....	Stand pipe
219	Forrest and York.....	36 feet.....	Stand pipe
220	Sycamore and Park.....	7 feet.....	Stand pipe
221	Lafond and Kent.....	7 feet.....	Stand pipe
222	Erie and St. Clair.....	32 feet.....	Stand pipe
223	Eagle and Washington.....	6 feet.....	Stand pipe
224	Tuscarora and Stewart.....	8 feet.....	Stand pipe
225	Victoria, between Selby and Hague.....	6 feet.....	Stand pipe
226	Bellows and Winnifred.....	24 feet.....	Stand pipe
227	Front and Grotto.....	6 feet.....	Stand pipe
228	Oxford and Summit.....	7 feet.....	Stand pipe
229	Summit and Griggs.....	52 feet south.....	Stand pipe
230	Concord and Curtis.....	9 feet west.....	Stand pipe
231	George and Hall.....	40 feet.....	Stand pipe
232	Dale and Atwater.....	7 feet.....	Stand pipe
233	Summit and Albert.....	9 feet.....	Stand pipe
234	Fisk and Laurel.....	40 feet.....	Stand pipe
235	Mound and Clermont.....	38 feet south.....	Stand pipe
236	Fairview and Marshall.....	8 feet west.....	Stand pipe
237	Laura and Rondo.....	8 feet.....	Stand pipe
238	Cleveland and Marshall.....	46 feet south.....	Stand pipe
239	Raymond and Kendrick.....	8 feet east.....	Stand pipe
240	Churchill and Front.....	57 feet north.....	Stand pipe
241	Cross and Van Slyke.....	9 feet east.....	Stand pipe
242	Front and Colne.....	9 feet south.....	Stand pipe
243	Avon and Osceola.....	36 feet south.....	Stand pipe
244	Avon and St. Anthony.....	6 feet.....	Stand pipe
245	Wilder and Rondo.....	36 feet.....	Stand pipe
246	Bunker and Oakdale.....	25 feet.....	Stand pipe
247	Bancroft and Winnifred.....	8 feet.....	Stand pipe
248	Concord and Page.....	8 feet.....	Stand pipe
249	Columbia and Glencoe.....	8 feet.....	Stand pipe
250	Cypress and Hastings.....	6 feet.....	Stand pipe
251	Westminster and N. P. Ry. Co.....	7 feet.....	Stand pipe
252	Louis and Rondo.....	34 feet.....	Stand pipe
253	Fisk and Iglehart.....	7 feet.....	Stand pipe



## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.	NAME OF HYDRANT
254	Chatsworth and Union.....	36 feet.....	Stand pipe
255	Indiana and Custer.....	7 feet.....	Stand pipe
256	Feronia and Lynnhurst.....	5 feet.....	Stand pipe
257	Clinton and Delos.....	5 feet.....	Stand pipe
258	University and Cromwell.....	26 feet.....	Stand pipe
259	University and LaSalle.....	9 ft. s., 12 ft. c.....	Stand pipe
260	University and Aldine.....	8 ft. s., 9 ft. w.....	Stand pipe
261	University and Pascal.....	8 ft. s., 11 ft. w.....	Stand pipe
262	University and Griggs.....	8 ft. s., 10 ft. w.....	Stand pipe
263	St. Albans and Pleasant.....	7 feet.....	Stand pipe
264	Pleasant and Goodrich.....	9 feet east.....	Stand pipe
265	Pleasant and Western.....	25 feet.....	Stand pipe
266	Jessamine and Rice.....	8 feet.....	Stand pipe
267	Indiana and State.....	8 feet.....	Stand pipe
268	Earl and Cook.....	7 feet.....	Stand pipe
269	Earl and Case.....	6 feet.....	Stand pipe
270	Miller and Grand.....	45 ft. s., 9 ft. w.....	Stand pipe
271	Maple and Fifth.....	8 feet.....	Stand pipe
272	Park and Atwater.....	37 ft. s., 8 ft. c.....	Stand pipe
273	Park and Litchfield.....	37 ft. s., 6 ft. c.....	Stand pipe
274	Arundel and Thomas.....	7 feet.....	Stand pipe
275	Avon and Lincoln.....	4 ft. s., 7 ft. c.....	Stand pipe
276	Arundel and Aurora.....	6 ft. w., 6 ft. c.....	Stand pipe
277	St. Albans and Edmund.....	44 ft. s., 5 ft. c.....	Stand pipe
278	St. Albans and Fuller.....	35 ft. s., 7 ft. c.....	Stand pipe

Number placed this year, 21.

Total placed to date, 278.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Alabama	East line of State			1							
Armstrong	East and west line of Seventh			2							
Armstrong	East and west line of Victoria			2							
Andubon	East line of Seventh			1							
Ada	North line of Robie		1								
Arbor	North line of Jefferson			1							
Banfil	East and west line of Seventh		2								
Banfil	West line of Western		1								
Bay	East and west line of Seventh			2							
Bay	South line of Lee			1							
Bay	South line of Tuscarora			1							
Bay	North line of Tuscarora			1							
Bay	South line of Randolph			1							
Beaumont	East and west line of Bediord			2							
Beaumont	East line of DeSoto			1							
Becker Place	South line of Lafayette			1							
Bedford	North line of North			1							
Bedford	North line of Minnehaha			1							
Bradley	North line of Partridge			1							
Bradley	North line of Beaumont		1								
Broadway	On hydrant in Mill yard		1								
Broadway	On hydrant at R. R.		1								
Broadway	North and South line of Third					2					
Broadway	Blow off at Third	1									
Broadway	North line of Fifth					1					
Broadway	North line of Sixth			1							
Broadway	North and south line of Seventh, M. & H.		1	2		1		1			
Broadway	Blow off at Ninth			1							
Broadway	South line of Grove			2					1		
Broadway	North line of Thirteenth		1								
Bruno	East line of Lafayette			1							
Brunson	South line of Hopkins			1							
Brunson	South line of North			1							
Burr	North line of Collins			1							
Burr	North and south line of Beaumont			2							
Bancroft	North line of Winnifred			1							
Bancroft	North line of Robie			1							
Bancroft	North line of Concord			1							
Belvedere	South line of Concord			1							
Belvedere	West line of Waterloo			1							
Bidwell	South line of Isabel			1							
Chicago	East of west line of Starkey			2							
Concord	South line of Isabel					1					
Concord	East and west line of State					2					
Concord	West of east line of Bancroft					1					
Concord	West line of Kansas					1					
Concord	East line of Stickney					1					
Congress	West line of Anita			1							
Congress	East and West line of State			2							
Congress	East line of Clinton			2							
Congress	East and west line of Concord			2							
Congress	East line of Wabasha			1							
Congress	West line of Goff			1							
Congress	East line of Stryker			1							
Congress	East line of Winslow			1							
Congress	East line of Bellows			1							
Colorado	West line of Clinton			1							
Colorado	East line of Livingston			1							
Clinton	South line of Congress			1							
Canada	North line of Ninth			1							
Canada	North and south line of Grove			2							
Cedar	North line of Third					1					
Cedar	North line of Fifth					1					
Cedar	Blow off at Sixth		1								
Cedar	North and south line of Seventh					2					
Cedar	Blow off at Eighth	1									

## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Cedar	South line of Tenth					1					
Cedar	North and south line of Twelfth			1				1			
Chestnut	West line of Franklin		1								
Chestnut	East line of Seventh		1								
Colborne	North line of Seventh		1								
Colborne	North line of St. Clair		1								
College	West line of Cedar		1								
College	West line of Wabasha		1								
College	West line of St. Peter		1								
College	South line of Tenth		1								
Collins	West line of Bedford		1								
Collins	East line of Lafayette		1								
Decatur	East line of Bedford		1								
DeSoto	South line of Collins		1								
Douglas	North and s. line of Seventh		2								
Douglas	South line of Lisbon		1								
Duke	South line of Jefferson		1								
Duke	South line of Seventh		1								
Doussman	North line of Von Minden		1								
Doussman	South line of Goodhue		1								
Daly	North line of James		1								
Daly	South line of Jefferson		1								
Delos	West line of Clinton		1								
Delos	East line of Livingston		1								
Delos	East and west line of Starkey		1								
Delos	East line of Stryker		1								
Delos	East line of Bidwell		1								
Dearborn	East line of Livingston		1								
Eagle	North line of Washington		1								
Eagle	South Line of Exchange		1								
Eagle	South line of Seventh		1								
Eighth	Blowoff, 107 feet East of Neill	1									
Eighth	East and west line of Locust	2									
Eighth	East and west line of Broadway	4									
Eighth	West line of Sibley	1									
Eighth	East and west line of Jackson	2									
Eighth	East line of Minnesota	1									
Eighth	East and west line of Cedar	2									
Eighth	East line of Wabasha	1									
Eleventh	West line of Jackson	1									
Eleventh	West line of Robert	1									
Eleventh	East line of Cedar	1									
Elm	East line of Exchange	1									
Exchange	Center line of Wilkin	1									
Exchange	North line of Sherman	1									
Exchange	West line of Chestnut	1									
Exchange	West line of Eagle	1									
Exchange	North and south line of Third	2									
Exchange	North and south line of Seventh	1	1								
Exchange	South line of Ninth	1									
Exchange	East and west line of St. Peter	2									
Edgerton	North line of Minnehaha	1									
Eric	North line of Seventh	1									
Fairfield	West line of State	1									
Fairfield	West line of Eva	1									
Fairfield	West line of Eaton	1									
Fairfield	West line of Livingston	1									
Fairfield	East and west line of Starkey	2									
Fairfield	West line of Wabasha	1									
Pillmore	West line of State	1									
Pillmore	East line of Eva	1									
Pillmore	East line of Robert	1									
Pillmore	East line of Livingston	1									
Pillmore	East and west line of Starkey	2									
Pauquier	East line of DeSoto	1									

## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Fifth.....	West line of Neill.....			1							
Fifth.....	West line of Willis.....			1							
Fifth.....	West line of John.....			1							
Fifth.....	West line of Olive.....			1							
Fifth.....	East and w. line of Broadway			1		1					
Fifth.....	East line of Wacouta.....					1					
Fifth.....	East line of Sibley.....					1					
Fifth.....	East and west line of Jackson					2					
Fifth.....	West line of Robert.....					2					
Fifth.....	East and west line of Cedar.....										
Fifth.....	East line of Wabasha.....			1							
Fifth.....	West line of St. Peter.....		1								
Fifth.....	West line of Washington.....		1								
Fifth.....	South line of Seventh.....			1							
Fifth.....	East line of Exchange.....			1							
Fifth.....	East line of Fort.....		1								
Fifth.....	East line of Smith.....		1								
Fifth.....	East line of Third.....			1							
Fort.....	North line of Fourth.....		1					1			
Fort.....	Blowoff north line of Fourth		1								
Fort.....	On H., south line of Fifth.....		1								
Fort.....	On H., south line of Sixth.....		1								
Fort.....	On M. and H., s. line of Ninth		1					1			
Fort.....	On H., bet. Ninth and Tenth.....		1								
Fourth.....	East of St. P. and D., on H.....			1							
Fourth.....	East and west line of Kittson					2					
Fourth.....	B. O. at Neill.....	1									
Fourth.....	West line of Locust.....					1					
Fourth.....	East and w. line of Broadway			1		1					
Fourth.....	West line of Rosabel.....			1							
Fourth.....	West line of Wacouta.....			1							
Fourth.....	East and west line of Jackson			2							
Fourth.....	East line of Minnesota.....			1							
Fourth.....	East and west line of Cedar.....			2							
Fourth.....	West line of Wabasha.....			1							
Fourth.....	West line of Market.....			1							
Fourth.....	East line of Franklin.....			1							
Fourteenth.....	East and west line of Canada			2							
Fourteenth.....	East line of Jackson.....			1							
Franklin.....	North line of Sherman.....		1								
Franklin.....	North line of Irvine Park D.....		1								
Franklin.....	North line of Chestnut.....		1								
Franklin.....	North line of Third.....		1								
Franklin.....	North line of Fourth.....		1								
Franklin.....	North and s. line of Seventh.....		2								
Franklin.....	South line of Ninth.....		1								
Fred.....	East line of Burr.....		1								
Forbes.....	West line of Wilkin.....			1							
Forbes.....	East and west line of Seventh			2							
Forbes.....	West line of Smith.....			1							
Garfield.....	North line of Lisbon.....			1							
Garfield.....	North line of Goodrich.....			1							
Goodhue.....	East and west line of Seventh			2							
Goodhue.....	East line of Richmond.....			1							
Goodrich.....	East and west line of Seventh										
	M. and B. O.....	1				1					
Grace.....	South line of Seventh.....			1							
Grove.....	West line of Lafayette.....			1							
Grove.....	West line at center of Missis-										
	issippi, M. H. and B. O.....							2			
Grove.....	On H., west line of Canada.....		1								
Grove.....	East line of Jackson.....							1			
Glencoe.....	East line of Columbia.....			1							
Glencoe.....	West line of Mississippi.....			1							
George.....	West line of State.....					1					
George.....	West line of Livingston.....					1					
George.....	East line of Stryker.....					1					



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
George	Dividing line between high and low service, West Side, Stryker			1							
Goff	North line of Winnifred			1							
Greenwood	South line of Congress			1							
Harrison	West line of Douglas			1							
Harrison	West line of Garfield			1							
Hopkins	West line of Bradley			1							
Hopkins	East line of DeSoto			1							
Hall	South line of Colorado			1							
Hall	North and south line of Isabel			2							
Hall	South line of Congress			1							
Hall	North line of Robie			1							
Hall	North line of George			1							
Indiana	West line of State					1					
Indiana	West line of Eaton					1					
Indiana	East and west line of Starkey					1	1				
Indiana	West line of Walther					1					
Isabel	West line of State					1					
Isabel	East and West line of Starkey					2					
Isabel	West line of Winslow					1					
Jackson	B. O. & M. north line of Levee and Levee	1	1								
Jackson	South line of Fourth					1					
Jackson	North and S. line of Seventh					2					
Jackson	South line of Ninth					1					
Jackson	South line of Twelfth					1					
Jackson	North line of Grove			1							
Jackson	South line of Fourteenth			1							
Jefferson	East and west line of Seventh			1							
Jefferson	East line of Warsaw					1					
James	East and west line of Seventh			2							
James	East line of Warsaw			1							
Jessie	South line of Fauquier			1							
John	North line of Third			1							
John	North line of Fourth			1							
John	North line of Fifth			1							
John	North and south line of Seventh			1							
John	South line of Tenth			1							
John	North and south line of Grove			1							
John	North and south line of Olmstead			1							
Jeno	North and south line of Victoria			2							
Kittson	North line of Fourth			1							
Kittson	North line of Fifth			1							
Kittson	South line of Seventh			1							
Kentucky	East line of State			1							
Lafayette	On H., north line of Woodward			1							
Lafayette	North and south line of Bruno					2					
Lafayette	Northern Pacific track, B. O.			1							
Lafayette	South line of Collins					1					
Lee	West line of Warsaw			1							
Lee	South line of Seventh			1							
Leech	North line of Goodrich			1							
Leech	North line of McBoal			1							
Leech	West line of Seventh			1							
Leech	North line of Ramsey			1							
Locust	M. and H., north line of Seventh			1				1			
L'Orient	North line of Thirteenth			1							
L'Orient	South line of Mt. Airy			1							
L'Orient	North line of Glencoe			1							
Lisbon	West line of Douglas			1							
Logan	East line of Canton			1							
Livingston	North line of Delos			1							



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Overton.....	B. O., 1562 feet north of Como and Phalen.....			1							
Overton.....	M and B. O., at pumping station.....			1						1	1
Oakdale.....	South line of Prescott.....			1							
Oakdale.....	Dividing line between high and low service, West Side, on Midway.....			1							
Partridge.....	West line of Bradley.....		1								
Pine.....	North line of Seventh.....		1								
Pine.....	North line of Eighth.....		1								
Pine.....	North line of Ninth.....		1								
Pine.....	North line of Grove.....			1							
Pine.....	North line of Olmsted.....			1							
Pleasant.....	East and west line of Third.....			2							
Pleasant.....	North line of Walnut.....			1							
Pleasant.....	West line of Thompson.....			1							
Pleasant.....	West line of Western.....			1							
Prince.....	East line of Broadway.....			1							
Payne.....	North line of Minnehaha.....			1							
Payne.....	South line of Pauquier.....			1							
Pennsylv'nia.....	East and west line of Mississippi.....			3							
Pennsylv'nia.....	West line of L'Orient.....			1							
Preble.....	North line of Beaumont.....			1							
Prescott.....	East line of Oakdale.....			1							
Ramsey.....	West line of Seventh.....				1						
Ramsey.....	West line of Thompson.....			1							
Ramsey.....	South line of Pleasant.....			1							
Randolph.....	East and west line of Seventh.....			1		1					
Randolph.....	East and west line of Victoria.....					2					
Richmond.....	South line of Seventh.....			1							
Robert.....	North and south line of Third.....			2							
Robert.....	North line of Fourth.....			1							
Robert.....	North line of Fifth.....			1							
Robert.....	North and south line of Seventh.....			2							
Robert.....	North line of Eighth.....			1							
Robert.....	North line of Ninth.....			1							
Robert.....	South line of Eleventh.....			1							
Robert.....	North and south line of Twelfth.....			2							
Robert.....	South line of Fourteenth.....			1							
Robert.....	North line of Fairfield.....			1							
Robert.....	North and south line of Indiana.....			2							
Robert.....	South line of Chicago.....			1							
Robert.....	South line of Plato.....			1							
Robert.....	North line of Colorado.....			1							
Robert.....	North line of Delos.....			1							
Robert.....	North and south line of Isabel.....			1							
Robert.....	North line of Concord.....			1							
Robert.....	South line of George.....			1							
Robert.....	North line of Louisa.....			1							
Robie.....	West line of Anita.....			1							
Robie.....	East line of State.....			1							
Reaney.....	West line of Payne.....			1							
Rosabel.....	South line of Third.....			1							
Rosabel.....	South line of Fourth.....			1							
Rosabel.....	North and south line of Fifth.....			2							
Rosabel.....	South line of Seventh.....			1							
St. Clair.....	East and west line of Western.....			2							
St. Clair.....	East line of Seventh.....			1							
St. Peter.....	North line of Third.....			1							
St. Peter.....	North line of Fourth.....			1							
St. Peter.....	South line of Sixth.....			1							
St. Peter.....	North and South line of Seventh.....			2							
St. Peter.....	North and south line of Tenth.....			2							



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
St. Peter.....	D. H. and L. S., north line of College.....			1							
Seventh.....	West line of Kittson.....			1							
Seventh.....	East and west line of Locust.....			1		1					
Seventh.....	East and west line of Broadway.....					2					
Seventh.....	B. O., center line of Robert.....	1									
Seventh.....	East and west line of Jackson.....					2					
Seventh.....	East line of Wabasha.....					1					
Seventh.....	West line of Franklin.....					1					
Seventh.....	West line of Eagle.....					1					
Seventh.....	O. H., west line of Chestnut.....			1				1			
Seventh.....	H. and B. O. at line of Walnut.....	1		2							
Seventh.....	M. and H., North and south line of Walnut.....			1		1	1				
Seventh.....	West line of Exchange.....					1					
Seventh.....	South line of McBoal.....					1					
Seventh.....	B. O., north line of Goodrich.....	1									
Seventh.....	North line of Yankee.....					1					
Seventh.....	M. and H., east line of Colborne.....		1			1					
Seventh.....	East line of Erie.....		1								
Seventh.....	B. O., north line of Jefferson.....	1									
Seventh.....	South line of Palace.....					1					
Seventh.....	B. O., east line of Daly.....	1									
Seventh.....	South line of Audubon.....					1					
Seventh.....	B. O., north line of Lee.....	1									
Sherman.....	East line of Exchange.....			1							
Sherman.....	East and west line of Seventh.....			2							
Sherman.....	South line of Pleasant.....			1							
Sibley.....	North and south line of Third.....	1		1							
Sibley.....	South line of Fifth.....			1							
Sibley.....	South line of Sixth.....			1							
Sibley.....	North and south line of Seventh.....		1								
Sibley.....	North line of Ninth.....	1									
Sibley.....	North line of Tenth.....	1									
Sibley.....	North line of Spruce.....	1									
Sixth.....	West line of Kittson.....			1							
Sixth.....	West line of Neill.....			1							
Sixth.....	West line of Willis.....			1							
Sixth.....	East line of John.....			1							
Sixth.....	East line of Olive.....			1							
Sixth.....	East and west line of Broadway.....					2					
Sixth.....	West line of Rosabel.....		1								
Sixth.....	East line of Wacouta.....			1							
Sixth.....	East line of Sibley.....			1							
Sixth.....	East and west line of Jackson.....			2							
Sixth.....	East line of Robert.....			1							
Sixth.....	East line of Minnesota.....			1							
Sixth.....	East and west line of Cedar.....			2							
Sixth.....	West line of Wabasha.....			1							
Sixth.....	East line of Washington.....										
Sixth.....	South line of Seventh.....			1							
Sixth.....	East line of Franklin.....			1							
Sixth.....	East line of Exchange.....			1							
Sixth.....	East and west line of Fort.....			2							
Sixth.....	North line of Smith.....			1							
Sixth.....	East and west line of Seventh.....			2							
Smith.....	North line of Forbes.....			1							
Smith.....	North line of Ramsey.....			1							
Smith.....	North line of Sherman.....			1							
Smith.....	North line of Walnut.....			1							
Smith.....	North and south line of Third.....			2							
Smith.....	North line of Sixth.....			1							
Somersett.....	East line of Pine.....			1							
Somersett.....	West line of John.....			1							



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Summit	East line of Minnesota			1							
Stewart	South line of Tuscarora			1							
Spruce	East line of Broadway		2								
State	Center of proposed levee					1					
State	South line of Indiana					1					
State	North line of Morrison					1					
State	North line of Isabel					1					
State	North and south line of Concord						2				
State	M. and H., north and south line of Louisa			1			1				
State	On H., south line of Elizabeth			1							
State	On H., south line of Bunker			1							
State	South line of Page					1					
Stryker	North line of George			1							
Stryker	North line of Winnifred			1							
Stryker	North and south line of Isabel			2							
Temperance	North line of Eighth		1								
Temperance	North line of Tenth		1								
Temperance	North and south line of Grove		2								
Tenth	West line of Locust			1							
Tenth	East and west line of Broadway		2	2							
Tenth	West line of Canada		1								
Tenth	East and west line of Jackson		2								
Tenth	West line of Robert			1							
Tenth	M. and H., east and west line of Cedar		1	1							
Tenth	B. O., east line of Wabasha		1								
Tenth	West line of St. Peter					1					
Tenth	On H., west line of St. Peter		1								
Tenth	West line of Fort			1							
Third	East and west line of Broadway					2					
Third	East line of Wacouta					1					
Third	East and west line of Jackson					2					
Third	West line of Minnesota					1					
Third	East line of St. Peter					1					
Third	East and west line of Washington					2					
Third	South line of Seventh					1					
Third	West line of Fort			1							
Third	Dividing line between high and low service, North line of Pleasant			1							
Thirteenth	East and west line of Mississippi			4							
Thirteenth	East and west line of Canada			2							
Thirteenth	East line of Jackson			1							
Thompson	North line of Ramsey			1							
Twelfth	B. O. on H., west line of Jackson		2								
Twelfth	On H., west line of Minnesota		1								
Twelfth	On H., East line of Cedar		1								
Toronto	East and west line of Seventh			2							
Tuscarora	West line of Warsaw			1							
Tuscarora	East and west line of Seventh			2							
Tuscarora	West line of Victoria			1							
Tennessee	East line of State			1							
Van Slyke	East line of Broadway		2								
Von Minden	East line of Western			1							
View	North line of Seventh			1							
View	South line of Armstrong			1							
View	South line of Juno			1							
View	North and South line of Randolph			2							



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Main Line—											
Old .....	East of Greenwood, B. O.....	1									
Main Line—											
Old .....	East of Greenbrier, B. O.....	1									
Main Line—											
Old .....	Payne and Ross.....						1				
		15	132	433	8	66	35	10	4	5	1

Number of valves laid this year..... 16  
 Total number of valves on low service.....709

## LOCATION OF VALVES (HIGH SERVICE).

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Arundel	North line of Summit	1								
Arundel	South line of Selby	1								
Arundel	North line of Dayton	1								
Arundel	North line of Marshall	1								
Arundel	North line of Charles	1								
Arundel	North line of Edmunds	1								
Arundel	North line of Thomas	1								
Ashland	West line of Western	1								
Ashland	East line of Mackubin	2								
Ashland	East and west line of Dale	1								
Ashland	East line of Grotto	2								
Ashland	East and west line of Victoria	2								
Ashland	East line of Chatsworth	1								
Aurora	West line of Rice	1								
Aurora	East line of Jay	1								
Aurora	West line of Farrington	1								
Aurora	East and west line of Western	2								
Aurora	East line of Mackubin	1								
Aurora	East and west line of Dale	2								
Aurora	West line of Victoria	1								
Aurora	South line of University	1								
Arcade	North line of Dawson	1								
Arcade	North and south line of Seventh	1								
Arcade	North line of Minnehaha	1								
Arcade	South line of Omaha Ry.	1								
Arcade	North line of Duluth Ry., B. O.	1								
Arcade	North and south line of Case	2								
Arcade	South line of Magnolia	1								
Arcade	North line of Pauquier	1								
Astoria	North line of St. Anthony	1								
Arch	West line of Mt. Vernon	1								
Arch	East line of Jackson	1								
Atlantic	North and south line of Seventh	2								
Atlantic	South line of Ross	1								
Atwater	East line of Rice	1								
Agate	East line of Courtland	1								
Agate	North line of Granite	1								
Agate	South line of York	1								
Avon	South line of Marshall	1								
Avon	North line of Iglehart	1								
Avon	North line of Carroll	1								
Avon	North line of St. Anthony	1								
Arlington	East line of Payne	1								
Argyle	North line of Front	1								
Albemarle	South line of Wayzata	1								
Albemarle	South line of Front	1								
Bates Ave.	North line of Conway	1								
Bates Ave.	South line of Seventh	1								
Beech	East and west line of Earl	2								
Beech	East line of Forrest	1								
Beech	East line of Mendota	1								
Beech	South line of Seventh	1								
Blair	West line of Western	1								
Blair	East line of Mackubin	1								
Blair	East line of Dale	1								
Blair	East line of Aldine	1								
Blair	East line of Fairview	1								
Broadway	B. O. north line of Thirteenth	1								
Broadway	North line of Valley	1								
Brewster	North line of University	1								
Brewster	North line of Sherburne	1								
Burr	South line of York	1								
Burr	North and south line of Case	2								
Burr	South line of Lawson	1								
Burr	North and south line of Maryland	2								
Burgess	West line of Como	1								
Burgess	East line of Dale	1								
Bayless ave.	South line of Cudworth	1								
Bayless ave.	Head of Bayless, P. on H	1								



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Bayless ave.	South line of Robbins, M. and H.			1		1				
Bayless ave.	North line of Tainter, on H.			1						
Bayless Pl.	East line of Bayless ave.		1							
Blake.	East line of Scudder.			1						
Blake.	East line of Langford, P. P. E. on H.			1						
Burns ave.	East line of Mound.			1						
Burns ave.	East and west line of Earl.			2						
Beacon	South line of University.			1						
Buffalo	North line of Capitol.			1						
Buffalo	South line of granite.			1						
Bradley.	North line of Maryland.			1						
Bradford	North line of Hampden.			1						
Canada	North line of University.			1						
Canada	South line of Valley.			1						
Capitol	West line of Mississippi.			1						
Capitol	East line of Cortland.			1						
Capitol	East and west line of Jackson.			2						
Capitol	West line of Western.			1						
Capitol	West line of Pascal.			1						
Capitol	West line of Simpson.			1						
Capitol	East and west line of Snelling.			2						
Capitol	East line of Aldine.			1						
Capitol	East line of Fairview.			1						
Carroll	West line of Rice.			1						
Carroll	East line of Louis.			1						
Carroll	West line of Farrington.			1						
Carroll	East and west line of Western.			2						
Carroll	East line of Mackubin.			2						
Carroll	East and west line of Dale.			2						
Carroll	East line of Grotto.			1						
Carroll	West line of Avon.			1						
Carroll	East and west line of Victoria.			2						
Carroll	West line of Snelling.			1						
Carroll	East and west line of Fairview.			2						
Carroll	East and west line of Prior.			2						
Carroll	East line of Cleveland.			1						
Conway	East and west line of Mendota.			2						
Conway	East line of Maple.			1						
Conway	East and west line of Bates.			2						
Cedar.	North and south line of Central.			2						
Cedar.	North and south line of University.			2						
Cedar.	South line of Viola.			1						
Central Av.	East line of Cedar.			1						
Central Av.	West line of Wabasha.			1						
Central Av.	West line of St. Peter.			1						
Central Av.	East line of Rice.			1						
Central, P. D.										
E. & W.	South of Central avenue.			2						
Charles.	West line of Rice.			1						
Charles.	West line of Gaultier.			1						
Charles.	East and west line of Western.			2						
Charles.	East line of Mackubin.			1						
Charles.	East and west line of Dale.			2						
Charles.	East line of Grotto.			1						
Charles.	East and west line of Victoria.			2						
Charles.	West line of Lexington.			1						
Charles.	West line of Fairview.			1						
Como.	East and west line of Rice.					2				
Como.	South line of Thomas on H.			1						
Como.	East line of Claghorn on H.			1						
Como.	South line of Lafond on H.			1						
Como.	East and west line of Gaultier,									
	M. and H.			1			1			
Como.	East line of Effelt on H.			1						
Como.	North line of Van Buren on H.			1						
Como.	North line of Minnehaha on H.			1						
Como.	West line of Virginia on H.			1						
Como.	East and west line of Western,									
	M. and H.			1			2			

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Como.....	South line of Atwater, B. O.....			1						
Como.....	South line of Topping.....						1			
Como.....	East line of Da. e.....						1			
Cherry.....	East line of Hoffman.....			1						
Cook.....	East and west line of Arcade.....			1						
Cook.....	West line of Greenbrier.....			1						
Cook.....	East line of Edgerton.....			1						
Cook.....	East and west line of McMenemy.....			1						
Cook.....	East line of Rice.....			1						
Case.....	East and west line of Arcade.....				2					
Case.....	West line of Greenbrier.....				1					
Case.....	East and west line of Edgerton.....				1					
Case.....	West line of DeSoto.....				1					
Case.....	West line of McMenemy.....			1						
Claghorn.....	South line of Blair.....			1						
Cromwell.....	North and south line of Pym.....			1						
Cudworth.....	West line of Langford.....			1						
Clark.....	North line of Whittall.....			1						
Clark.....	South line of Case.....			1						
Cross.....	West line of Argyle.....			1						
Cross.....	West line of Oxford.....			1						
Cross.....	East line of Lexington.....			1						
County Rd.....	South line of Dooley, on H.....			1						
Crocus Pl.....	South line of Goodrich.....									
Crocus Pl.....	South line of Fairmount.....									
Chatsworth.....	North line of Evergreen.....			1						
Chatsworth.....	North line of Union.....			1						
Cleveland.....	South line of University.....									
Cleveland.....	South line of Myrtle, on H.....			1						
Cleveland.....	South line of Wabash, on H.....			1						
Cleveland.....	200 ft. north of Mil. Ry. on H.....			1						
Cleveland.....	South line of Gilbert, on H.....			1						
Cleveland.....	North line of St Anthony.....					1				
Cleveland.....	Head of Rondo, on H.....			1						
Cleveland.....	South line of Marshall.....				1					
Cleveland.....	South line of Laurel.....				1					
Cleveland.....	North and south line of Summit.....				2					
Cortland.....	North and south line of Sycamore.....			1						
Cortland.....	North line of Agate, on H.....			1						
Cortland.....	North line of York, on H.....			1						
Cortland.....	North line of Poplar, on H.....			1						
Cortland.....	North line of Case, on M. and H.....			1		1				
Cortland.....	North line of Jenks, on H.....			1						
Cortland.....	North line of Lawson, on H.....			1						
Cortland.....	At Cook, on H.....			1						
Cortland.....	North line of Magnolia, on H.....			1						
Cortland.....	North line of Jessamine, on H.....			1						
Cortland.....	North line of Geranium, on H.....			1						
Cortland.....	North line of Rose, on H.....			1						
Cortland.....	South line of Maryland, on H.....			1						
Carter.....	East line of Gordon.....			1						
Cayuga.....	West line of Mississippi.....			1						
Cayuga.....	East line of Agate.....			1						
Cayuga.....	East line of Cortland.....			1						
Chelton.....	West line of Tatum.....			1						
Churchill.....	North line of Front.....		1							
Churchill.....	North line of Hatch.....		1							
Churchill.....	South line of Cross.....			1						
Churchill.....	South line of Van Slyke.....									
Cypress.....	North line of Euclid.....		1							
Cambridge.....	South line of Lincoln.....		1							
Dale.....	South line of Goodrich.....				1					
Dale.....	North and south line of Summit.....				1		1			
Dale.....	B. O., at Grand.....	1								
Dale.....	At Ashland B. O.....	1								
Dale.....	North and south line of Marshall.....					2				
Dale.....	North and south line of University.....		1			1		1		
Dale.....	North line of Lafond.....		1							
Dale.....	North line of Minnehaha M. & B.O.....			1				1		

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Dale.....	South of Ireland.....	1								
Dale.....	In Gt. Northern R. R. yard on H.....	1								
Dale.....	North line of Gt. Northern Ry.....	1								
Dale.....	North and south line of Front M. & B. O. ....	1	3			1	3	2		
Dale.....	B. O. at Nigger Lake.....	2								
Dale.....	North line of Como and Phalen ave. B. O., at German Luth. cemetery.....	1	1				1	1		
Dale.....	Approach to reservoir M & B. O.....	4				2	1	1		
Dale.....	South line of Kansas.....	1								
Dale.....	North line of Minneapolis.....	1								
Dayton.....	West line of Summit.....	1								
Dayton.....	East and west line of Western.....	2								
Dayton.....	East line of Mackubin.....	1								
Dayton.....	East and west line of Dale.....	1								
Dayton.....	East line of Grotto.....	1								
Dayton.....	West line of Avon.....	1								
Dayton.....	East and west line of Victoria.....	2								
Dayton.....	East line of Chatsworth.....	1								
Dayton.....	East and west line of Lexington.....	2								
Dayton.....	East line of Griggs.....	1								
Dayton.....	West line of Snelling.....	1								
Dayton.....	East line of Pierce.....	1								
Dayton.....	West line of Herschel.....	1								
Dayton.....	East line of Fairview.....	1								
Dayton.....	East line of Prior.....	1								
Dayton.....	East line of Moore.....	1								
Dayton.....	East line of Cleveland.....	1								
Duluth.....	North line of Seventh.....	1								
Desoto.....	South line of Pauquier.....	1								
Desoto.....	South line of Whitall.....	1								
Desoto.....	South line of York.....	1								
Desoto.....	North and south line of Case.....	2								
Dawson.....	East and west line of Mendota.....	2								
Dawson.....	East and west line of Earl.....	2								
Dooley.....	East line of County Road.....	1								
Earl.....	South line of Pacific.....	1								
Earl.....	North line of Beech.....	1								
Earl.....	North and south line of Seventh.....	1								
Earl.....	North and south line of Case.....	1				2				
Edmund.....	West line of Rice.....	1								
Edmund.....	West line of Gaultier.....	1								
Edmund.....	East and West line of Western.....	2								
Edmund.....	East line of Mackubin.....	1								
Edmund.....	East and west line of Dale.....	2								
Edmund.....	East line of Grotto.....	1								
Edmund.....	East and west line of Victoria.....	2								
Eichenwald.....	South line of Seventh.....	1								
Eucild.....	West line of Cypress.....	1								
Eucild.....	East and west line of Mendota.....	2								
Ellett.....	North line of Charles.....	1								
Ellett.....	North line of Thomas.....	1								
Ellett.....	North line of Lafond.....	1								
Ellett.....	North and south line of Case.....	2								
Edgerton.....	South line of Magnolia.....	1								
Edgerton.....	South line of Maryland.....	1								
Everett Ct.....	South line of Wherry.....	1								
Evergreen.....	West line of Victoria.....	1								
Gillis.....	East line of Bradford.....	1								
Farrington.....	North line of Summit.....	1								
Farrington.....	North line of Laurel.....	1								
Farrington.....	North and south line of Dayton.....	2								
Farrington.....	North line of Nelson.....	1								
Farrington.....	South line of Carroll.....	1								
Farrington.....	South line of Rondo.....	1								
Farrington.....	North line of Sherburne.....	1								
Farrington.....	North line of Thomas.....	1								
Fauquier.....	West line of Duluth.....	1								
Fauquier.....	East and west line of Earl.....	2								



## LOCATION OF VALVES (HIGH SERVICE).

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Fauquier.....	North and south line of Seventh.....			2						
Fauquier.....	East and west line of Arcade.....			2						
Fuller.....	West line of Rice.....			1						
Fuller.....	East line of Louis.....			1						
Fuller.....	West line of Farrington.....			1						
Fuller.....	East and west line of Western.....			1						
Fuller.....	East line of Mackubin.....			1						
Fuller.....	East and west line of Dale.....			1						
Fuller.....	West line of Victoria.....			1						
Fuller.....	East line of Chatsworth.....			1						
Fifth.....	East and west line of Bates.....			2						
Floral.....	South line of Summit.....		1							
Fourth.....	East and west line of Mendota.....			2						
Fourth.....	East line of Maple.....			1						
Fourth.....	East and west line of Bates.....			2						
Fourth.....	East and west line of Earl.....			2						
Francis.....	West line of Mendota.....			1						
Front.....	East and west line of Rice.....			1						
Front.....	East line of Gaultier.....			1						
Front.....	East and west line of Western.....			1						
Front.....	East line of Mackubin.....			1						
Front.....	East and west line of Dale street mains.....			1	1					
Front.....	East line of Grotto.....			1						
Front.....	East and west line of Victoria.....			2						
Front.....	East line of Chatsworth.....			1						
Front.....	East line of Lexington.....			1						
Forrest.....	North line of Conway.....			1						
Forrest.....	North line of Third.....			1						
Forrest.....	North line of Fremont.....			1						
Forrest.....	North line of Fourth.....			1						
Forrest.....	North line of Dawson.....			1						
Forrest.....	North line of York.....			1						
Forrest.....	South line of Case.....			1						
Forrest.....	North line of Jessamine.....			1						
Fairmount.....	East of St. Albans 275 feet.....			1						
Fairmount.....	East line of Grotto.....			1						
Fairmount.....	East line of Victoria.....			1						
Fairmount.....	West line of Victoria.....			1						
Feronia.....	West line of Laura.....			1						
Feronia.....	East line of Prior.....			1						
Feronia.....	West line of Fairview.....			1						
Freemont.....	East and west line of Mendota.....			2						
Fairview.....	At Shields, on H.....			2						
Fairview.....	North and south line of University M. H. and B. O.....			2						
Fairview.....	At Sherburn on H.....			1						
Fairview.....	North line of Thomas.....			1						
Fairview.....	North and south line of Minne- haha.....			2						
Pry.....	North and south line of Minnehaha.....		2							
Pry.....	South line of Van Buren.....		1							
Force Main.....	South of pumping station.....						1			
Force Main.....	B. O., at Trout Brook.....						1			
Force Main.....	South of McCarron Lake, M. & B O.....						1			
Force Main.....	West line of Dale, M. and B. O.....		1	2			2			
Flandrau.....	North line of La Crosse.....									
Grand.....	East line of Oakland.....			2						
Grand.....	East and west line of Dale.....			2						
Grand.....	East line of Grotto.....			2						
Grand.....	East and west line of Victoria.....			1						
Grand.....	East line of Lexington.....			1						
Grand.....	East line of Cambridge.....			1						
Grand.....	West line of Cleveland.....			1						
Grove.....	B. O., at Trout Brook sewer.....		1							
Grove.....	East line of Monroe Place.....					1				
Grove.....	B. O., at Pine.....		1							
Grotto.....	South line of Grand.....			1						
Grotto.....	North and south line of Summit.....			2						



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Grotto.....	South line of Holly.....	1								
Grotto.....	South line of Ashland.....	1								
Grotto.....	South line of Laurel.....	1								
Grotto.....	South line of Hague.....	1								
Grotto.....	South line of Selby.....	1								
Grotto.....	South line of Dayton.....	1								
Grotto.....	South line of Marshall.....	1								
Grotto.....	North line of Iglehart.....	1								
Grotto.....	North line of Carroll.....	1								
Grotto.....	North line of Sherman.....	1								
Grotto.....	North line of Thomas.....	1								
Goodrich.....	East and west line of Dale.....	2								
Goodrich.....	East line of Grotto.....	1								
Goodrich.....	East and west line of Victoria.....	2								
Goodrich.....	East line of Chatsworth.....	1								
Greenbrier.....	North line of Seventh.....	1								
Greenbrier.....	North line of Case.....	1								
Greenbrier.....	North line of Cook.....	1								
Gaultier.....	North line of Sherburne.....	1								
Gaultier.....	North line of Thomas.....	1								
Gaultier.....	North and south line of Front.....	2								
Gaultier.....	North line of Hatch.....	1								
Gaultier.....	North line of Lawson.....	1								
Gordon.....	East and west line of Scudder.....	2								
Gordon.....	West line of Nourse.....	1								
Gordon.....	North line of Langford.....	1								
Geranium.....	West line of Arcade.....	1								
Geranium.....	West line of Edgerton.....	1								
Genesee.....	West line of Mississippi.....	1								
Granite.....	West line of Mississippi.....	1								
Granite.....	East line of Agate.....	1								
Granite.....	East line of Cortland.....	1								
Hoffman.....	South line of Seventh.....	1								
Hoffman.....	South line of McLean.....	1								
Hoffman.....	North line of River.....	1								
Holly.....	West line of Western.....	1								
Holly.....	East line of Mackubin.....	1								
Holly.....	East and west line of Dale.....	2								
Holly.....	East line of Grotto.....	1								
Holly.....	East line of Victoria.....	1								
Hague.....	West line of Dale.....	1								
Hague.....	East line of Grotto.....	1								
Hague.....	West line of Avon.....	1								
Hague.....	East and west line of Victoria.....	2								
Hague.....	East line of Chatsworth.....	1								
Hague.....	East and west line of Lexington.....	2								
Hudson.....	East line of Mendota.....	1								
Hudson.....	East and west line of Bates.....	2								
Hastings.....	East and west line of Earl.....	2								
Hastings.....	East line of Forrest.....	1								
Hastings.....	West line of Maple.....	1								
Hastings.....	West line of Mound.....	1								
Hewitt.....	East and West line of Hamline.....	2								
Hewitt.....	West line of Sheldon.....	1								
Hewitt.....	West line of Holton.....	1								
Hewitt.....	West line of Simpson.....	1								
Hewitt.....	East and west line of Snelling.....	2								
Hope.....	South line of Sixth.....	1								
Hope.....	South line of Seventh.....	1								
Hampton.....	East line of Raymond.....	1								
Hampton.....	West line of Hampton.....	1								
Harvester.....	East line of White Bear.....	1								
Hazel.....	South line of Ames.....	1								
Horton.....	North line of Van Slyke.....	1								
Hardenberg.....	North line of Lyton.....	1								
Iglehart.....	West line of Wabasha.....	1								
Iglehart.....	East and west line of Rice.....	2								
Iglehart.....	West line of Summit Place.....	1								

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Iglehart.....	West line of Louis.....			1						
Iglehart.....	West line of Farrington....			1						
Iglehart.....	East and west line of Western.....			2						
Iglehart.....	East line of Mackubin.....			1						
Iglehart.....	East and west line of Dale.....			2						
Iglehart.....	East line of Grotto.....			1						
Iglehart.....	West line of Avon.....			2						
Iglehart.....	East and west line of Victoria.....			2						
Iglehart.....	East line of Chatsworth.....			1						
Iglehart.....	East and west line of Fairview.....			2						
Iglehart.....	East and west line of Prior.....			2						
Jackson.....	North line of University.....			1						
Jackson.....	South line of Valley.....			1						
Jackson.....	North and south line of Como.....			1						
Jackson.....	South line of Pennsylvania.....			1						
Jackson.....	South line of Sycamore.....			1						
Jay.....	South line of Martin.....			1						
Jay.....	South line of Fuller.....			2						
Jessamine.....	East and west line of Arcade.....			2						
Jessamine.....	West line of Greenbrier.....			2						
Jessamine.....	East and west line of Edgerton.....			2						
Jessamine.....	East line of Bradley.....			1						
Jessamine.....	West line of Burr.....			1						
Jessamine.....	West line of Clark.....			1						
Jessamine.....	West line of Arkwright.....			1						
Jessamine.....	East and west line of McMenemy.....			1						
Jessamine.....	East line of Rice.....			1						
Jessie.....	North line of Case.....			1						
Jessie.....	North line of Jenks.....			1						
Jessie.....	North line of Lawson.....			1						
Jessie.....	North line of Cook.....			1						
Jessie.....	North line of Magnolia.....			1						
Jessie.....	South line of Geranium.....			1						
Jessie.....	South line of Rose.....			1						
Jessie.....	South line of Maryland.....			2						
Jenks.....	East and west line of Arcade.....			1						
Jenks.....	West line of Greenbrier.....			1						
Jenks.....	East line of Edgerton.....			1						
Jenks.....	West line of DeSoto.....			1						
Jenks.....	East line of McMenemy.....			1						
Jenks.....	East line of Cortland.....			1						
Kent.....	South line of Holly.....									
Kent.....	South line of Ashland.....									
Kent.....	South line of Laurel.....									
Kent.....	South line of Selby.....									
Kent.....	North line of Marshal.....									
Kent.....	North line of Iglehart.....									
Knapp.....	East line of Langford.....			1						
Knapp.....	North line of Langford.....			1						
Keston.....	South line of Carter.....			2						
Laura.....	North and south line of Waltham.....			2						
Laura.....	South line of University.....			2						
Laurel.....	West line of Nina.....			2						
Laurel.....	East line of Virginia.....			2						
Laurel.....	East and west line of Western.....			2						
Laurel.....	East line of Mackubin.....			2						
Laurel.....	East and west line of Dale.....			2						
Laurel.....	East line of Grotto.....			2						
Laurel.....	West line of Avon.....			2						
Laurel.....	East and west line of Victoria.....			2						
Laurel.....	East line of Chatsworth.....			1						
Lawton.....	South line of Summit.....			1						
Lincoln.....	West line of Oakland.....			1						
Lincoln.....	East and west line of Dale.....			2						
Lincoln.....	East line of Grotto.....			1						
Lincoln.....	East and west line of Victoria.....			2						
Lincoln.....	East line of Chatsworth.....			1						
Lincoln.....	West line of Cleveland.....			1						
Lincoln.....	East line of Cambridge.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Louis.....	North line of Nelson.....	1								
Louis.....	South line of Carroll.....	1								
Louis.....	South line of Rondo.....	1								
Louis.....	South line of St. Anthony.....	1								
Louis.....	South line of Martin.....	1								
Louis.....	South line of Fuller.....	1								
Linden.....	North line of Mt. Airy.....	1								
Lafond.....	West line of Rice.....	1								
Lafond.....	East line of Como.....	1								
Lafond.....	East line of Farrington.....	1								
Lafond.....	West line of Western.....	1								
Lafond.....	East line of Mackubin.....	1								
Lafond.....	East and west line of Dale.....	2								
Lafond.....	East line of Grotto.....	1								
Lafond.....	East and west line of Victoria.....	2								
Lynchurst.....	North line of Peronia.....	1								
Lynchurst.....	South line of University.....	1								
Lynchurst E.....	East line of Lynchurst, W.....	1								
Lexington.....	South line of Summit.....	1								
Lexington.....	North line of University.....	1								
Lexington.....	North line of Front.....	1								
Lexington.....	North line of Sherburne.....	1								
Lexington.....	South line of N. P. R. R., on H.....	1								
Lexington.....	South line of Van Slyke.....	1								
Langford P.....	East line of Bayless.....	1								
Langford P.....	South line of Knapp.....	1								
Langford P.....	West line of Bayless.....	1								
Langford P.....	200 feet south of Blake.....	1								
Langford P.....	North line of Gordon.....	1								
Langford Av.....	West line of Scudder, on H.....	1								
Langford Av.....	East line of Knapp, on H.....	1								
Langford Av.....	West line of County Road.....	1								
Litchfield.....	East line of Rice.....	1								
Litchfield.....	West line of Victoria.....	1								
Leslie.....	West line of Victoria.....	1								
Lawson.....	West line of Earl.....	1								
Lawson.....	East and west line of Arcade.....	2								
Lawson.....	East line of Forrest.....	1								
Lawson.....	West line of Greenbrier.....	1								
Lawson.....	East line of Edgerton.....	1								
Lawson.....	East and west line of McMenemy.....	2								
Lawson.....	East line of Rice.....	1								
Lyon Place.....	East line of Rice.....	1								
Long.....	South line of Raymond.....	1								
Mackubin.....	North line of Summit.....	1								
Mackubin.....	South line of Holly.....	1								
Mackubin.....	South line of Ashland.....	1								
Mackubin.....	South line of Laurel.....	1								
Mackubin.....	South line of Selby.....	1								
Mackubin.....	North and south line of Dayton.....	2								
Mackubin.....	North line of Marshall.....	1								
Mackubin.....	North line of Iglehart.....	1								
Mackubin.....	North line of Carroll.....	1								
Mackubin.....	North line of Rondo.....	1								
Mackubin.....	North line of St. Anthony.....	1								
Mackubin.....	North line of Martin.....	1								
Mackubin.....	South line of Aurora.....	1								
Mackubin.....	North and south line of University.....	2								
Maple.....	South line of Hudson.....	1								
Maple.....	North line of Euclid.....	1								
Maple.....	North line of Conway.....	1								
Maple.....	South line of Fourth.....	1								







## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Millford.....	West line of Albemarle.....			1						
Millford.....	East line of Woodbridge.....			1						
Manitoba.....	East line of Rice.....			1						
Macalester.....	South line of Grand.....			1						
Macalester.....	South line of Lincoln.....			1						
Macalester.....	South line of Summit.....			1						
McMenemy.....	North line of Case.....			1						
McMenemy.....	South line of Magnolia.....			1						
McLean.....	West line of Earl.....			1						
Nelson.....	West line of Summit.....			1						
Nelson.....	East line of Farrington.....			1						
Nelson.....	East line of Western.....			1						
Nina.....	North line of Summit.....			1						
North.....	West line of Truxton.....			1						
North.....	North line of Seventh.....			1						
Nourse.....	South line of Gordon.....			1						
Oakland.....	South line of Ramsey.....			1						
Oakland.....	East line of Lawton.....			1						
Oakland.....	South line of Lincoln.....			1						
Oakland.....	South line of Summit.....			1						
Oakley.....	East line of Prior.....			1						
Oscola.....	West line of Pleasant.....			1						
Oscola.....	East line of Grotto.....			1						
Oscola.....	East and west line of Victoria.....			2						
Oscola.....	East line of Chatsworth.....			1						
Park Place.....	South of Summit Ave.....		1							
Park Ave.....	North line of Martin.....		2							
Park Ave.....	North and south line of University.....		1							
Park Ave.....	North line of Sherburne.....		1							
Pine.....	North line of Grove.....			1		1				
Pine.....	North line of Thirteenth.....			1						
Pine.....	North line of Olmsted.....			1						
Pine.....	North and south line of Williams.....			2						
Portland.....	West line of Western.....			1						
Portland.....	East line of Mackubin.....			1						
Portland.....	East and west line of Dale.....			2						
Portland.....	East line of Grotto.....			1						
Portland.....	East line of Victoria.....			1						
Pennsylvania.....	West line of Olive.....			1						
Pennsylvania.....	West line of Rice.....			1						
Plum.....	East line of Bates.....			1						
Plum.....	East line of Hoffman.....			1						
Prior.....	South line of Dayton.....			1						
Prior.....	North and south line of Marshall.....			1	1					
Prior.....	North line of St. Anthony.....			1	1					
Prior.....	South line of University.....			1	1					
Payne.....	North line of Whitall.....			1						
Payne.....	North line of Wells.....			1						
Payne.....	North line of York.....			1						
Payne.....	North and south line of Case.....			2						
Payne.....	North line of Jenks.....			1						
Payne.....	North line of Lawson.....			1						
Payne.....	North line of Cook.....			1						
Payne.....	North line of Magnolia.....			1						
Payne.....	North line of Jessamine.....			1						
Payne.....	North line of Geranium.....			1						
Payne.....	North and south line of Maryland.....			2						
Payne.....	North line of Hawthorne.....			1						
Payne.....	North line of Orange.....			1						
Payne.....	North line of Hyacinth.....			1						
Pascal.....	North line of Minnehaha.....			1						
Pascal.....	South line of Wesley.....			1						
Pascal.....	North line of Hewitt.....			1						
Pym.....	West line of Bayless.....			1						
Phalen.....	North line of Seventh.....			1						
Poplar.....	East line of Cortland.....			1						
Princeton.....	North line of Macalester.....			1						
Princeton.....	East line of Cambridge.....			1						
Pacific.....	West line of Earl.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Pacific.....	East line of Earl.....			1						
Reservoir.....	On Reservoir grounds.....	1			1					2
Rice.....	North and south line of Summit, M. and B. O.....		1			1				
Rice.....	North line of St. Anthony.....					1				
Rice.....	North and south line of University M. and H.....	1				1	1			
Rice.....	North line of Sherburne on H.....	1								
Rice.....	North line of Charles on H.....	1								
Rice.....	North line of Edmund, H. and B. O.....	2								
Rice.....	North and south line of Como.....						1			
Rice.....	North line of Van Buren.....									
Rice.....	North and south line of Sycamore.....					1				
Rice.....	Lytton Place on H.....			1						
Rice.....	South line of Wayzata on H.....			1						
Rice.....	North and south line of Front.....					2				
Rice.....	North line of Hatch on H.....			1						
Rice.....	North line of Lawson on H.....			1						
Rice.....	North line of Cook on H.....			1						
Rice.....	North line of Oliver on H.....			1						
Robert.....	South line of Aurora.....			1						
Robert.....	North line of University.....			2						
Robert.....	North line of Valley.....			1						
Rondo.....	West line of Rice.....			1						
Rondo.....	East line of Louis.....			1						
Rondo.....	West line of Farrington.....			1						
Rondo.....	East and west line of Western.....			2						
Rondo.....	East line of Mackubin.....			2						
Rondo.....	East and west line of Dale.....			2						
Rondo.....	East line of Grotto.....			1						
Rondo.....	West line of Avon.....			1						
Rondo.....	East and west line of Victoria.....			2						
Rondo.....	East and west line of Prior.....			2						
Reaney.....	West line of Duluth.....			1						
Reaney.....	East and west line of Earl.....			2						
Reaney.....	North and south line of Seventh.....			2						
Reaney.....	East and west line of Arcade.....			2						
Ramsey.....	East line of Summit.....			1						
Ross.....	West line of Duluth.....			1						
Ross.....	East and west line of Earl.....			2						
Ross.....	South line of Seventh.....			1						
Ravoux.....	South line of St. Anthony.....		1							
Ravoux.....	South line of Fuller.....		1							
Ravine.....	East and west line of Bates.....		2							
Raymond.....	North line of University, M. & H.....			1		1				
Raymond.....	South line of Territorial Road on H.....			1						
Raymond.....	North line of Ellis on H.....			1						
Raymond.....	East line of Bayless.....			1						
Raymond.....	South line of Manvel.....									
Raymond.....	North and south line of Wheeler.....			2						
Raymond.....	South line of Atty.....			1						
Raymond.....	South line of Pratt.....									
Raymond.....	South line of Cudworth.....									
Robbins.....	East line of Bayless.....			1						
Rose.....	West line of Arcade.....									
Rose.....	East line of Edgerton.....									
River.....	West line of Maria.....									
St. Anthony.....	West line of Rice.....			1						
St. Anthony.....	West line of Louis.....									
St. Anthony.....	West line of Farrington.....									
St. Anthony.....	East and west line of Western.....			2						
St. Anthony.....	East line of Mackubin.....			2						
St. Anthony.....	East and west line of Dale.....			2						
St. Anthony.....	East line of Grotto.....			1						
St. Anthony.....	West line of Avon.....			1						
St. Anthony.....	East and west line of Victoria.....			2						
St. Anthony.....	West line of Snelling.....			1						
St. Anthony.....	West line of Fry.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
St. Anthony	West line of Aldine.....			1						
St. Anthony	West line of Wheeler.....			1						
St. Anthony	East and west line of Fairview.....			2						
St. Anthony	East and west line of Prior.....			2						
St. Anthony	East line of Cleveland.....			1						
St. Peter	South line of Iglehart.....			1						
St. Peter	South line of Tilton.....			1						
St. Peter	North and south line of Martin.....			2						
St. Peter	South line of University.....			1						
Selby	West line of Summit.....			1						
Selby	West line of Nina.....			1						
Selby	West line of Farrington.....			1						
Selby	East and west line of Western.....			2						
Selby	East line of Mackubin.....			1						
Selby	East and west line of Dale.....			1						
Selby	East line of Grotto.....			1						
Selby	West line of Avon.....			1						
Selby	East and west line of Victoria.....			2						
Selby	East line of Chatsworth.....			1						
Selby	East and west line of Lexington.....			2						
Selby	East line of Griggs.....			1						
Selby	East and west line of Hamline.....			2						
Selby	East line of Pascal.....			1						
Selby	East line of Snelling.....			1						
Selby	West line of Hershel.....			1						
Selby	East line of Fairview.....			1						
Seventh	West line of White Bear.....					1				
Seventh	West line of Bock.....					1				
Seventh	East and west line of Phalen.....					2				
Seventh	East line of Duluth.....					1				
Seventh	East and west line of Earl, M and B. O.....			1						
Seventh	South line of Fauquier.....					1				
Seventh	B. O. at Mendota.....			1						
Seventh	North line of Beech.....					1				
Seventh	West line of Maple, M. & B. O.....			1						
Seventh	West line of Hoffman, M. & B. O.....			1						
Sherburne	West line of Cedar.....			1						
Sherburne	East line of Park.....			1						
Sherburne	East and west line of Rice.....			2						
Sherburne	West line of Gaultier.....			1						
Sherburne	East and west line of Western.....			2						
Sherburne	East line of Mackubin.....			1						
Sherburne	East and west line of Dale.....			2						
Sherburne	East line of Grotto.....			1						
Sherburne	East and west line of Victoria.....			2						
Suct'n Main	N. E. of pumping sta'n, M. & B. O.....			1			2			
Summit Av.	East line of Wabasha.....			1						
Summit Av.	East line of St. Peter.....			1						
Summit Av.	East and west line of Rice, M. & B. O.....			1		1				
Summit Av.	South line of Dayton.....			1						
Summit Av.	North line of Nina.....			1						
Summit Av.	East line of Western.....			1						
Summit Av.	East line of Mackubin.....					1				
Summit Av.	B. O. at Oakland.....			1						
Summit Av.	East and west line of Dale.....					2				
Summit Av.	At St. Albans B. O.....			1						
Summit Ave	East line of Grotto.....					1				
Summit Ave	East and west line of Victoria.....					2				
Summit Ave	East line of Chatsworth.....					1				
Summit Ave	East and west line of Lexington.....					2				
Summit Ave	East line of Griggs.....					1				
Summit Ave	East and west line of Hamline.....					2				
Summit Ave	West line of Snelling.....			1		1				
Summit Ave	West line of Cambridge.....					1				
Summit Pl.	North line of Nelson.....			1						
Summit Pl.	South line of Carroll.....			1						
Summit Pl.	South line of Rondo.....			1						



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Summit Pl.	South line of St. Anthony.		1							
Summit Pl.	South line of Martin.		1							
Summit Pl.	South line of Fuller.		1							
St. Albans.	North line of Pleasant.			1						
St. Albans.	South of Kenwood, P. D.		1							
St. Albans.	South of Fairmount.		1							
St. Albans.	South of Summit Ave.		1							
St. Albans.	South of Laurel Ave.		1							
St. Albans.	North line of Marshall.		1							
St. Albans.	North line of Iglehart.		1							
St. Albans.	North line of Carroll.		1							
St. Albans.	North line of St. Anthony.		1							
Sims.	East and west line of Arcade.		2							
Sims.	West line of Greenbrier.		1							
Sims.	East line of Edgerton.		1							
Short.	West line of Maria.		1							
Short.	East line of Hoffman.		1							
Snelling Ave	At Goodrich, on H.		1							
Snelling Ave	At Lincoln, on H.		1							
Snelling.	South line of Grand on H.		1							
Snelling.	North and south line of Summit,		1							
	M. & H.		1		2					
Snelling.	South line of Ashland on H.		1							
Snelling.	South line of Hague on H.		1							
Snelling.	South line of Selby on H.		1							
Snelling.	South line of Marshall, M. & H.		1		1					
Snelling.	North line of Milwaukee Short line				1					
Snelling.	North line of Carroll on H.		1							
Snelling.	North line of St. Anthony on H.		1							
Snelling.	North line of Shields on H.		1							
Snelling.	North and south line of University				2					
Snelling.	At Edmund on H.		1							
Snelling.	At Blair on H.		1							
Snelling.	North and south line of Minneha-		1		2					
	ha, M. & H.		1							
Snelling.	North line of Capitol on H.		1							
Snelling.	North line of Wesley on H.		1							
Snelling.	South line of Manitoba Ry on H.		1							
Simpson.	South line of Minnehaha.		1							
Simpson.	South line of Wesley.		1							
Simpson.	South line of Hewitt.		1							
Sixth.	West line of Arcade.		1							
Sixth.	West line of Hope.		1							
Sixth.	West line of Maple.		1							
Sixth.	East and west line of Bates.		2							
Sixth.	West line of Maria.		1							
Scudder.	At Atty on H.		1							
Scudder.	South line of Langford.				1					
St. Clair.	West line of Victoria.		1							
St. Clair.	East line of Chatsworth.		1							
Stinson.	West line of Gaultier.		1							
Sycamore.	West line of Cortland.		1							
Sycamore.	East line of Sylvan.		1							
Sycamore.	East line of Rice.		1							
Syndicate.	South line of Summit.		1							
Syndicate.	South line of Grand.		1							
Stillwater.	West line of White Bear.		1							
Sinnen.	South line of Seventh.		1							
Third.	East and west line of Mendota.		2							
Third.	East line of Maple.		1							
Third.	East and west line of Bates.		2							
Third.	South line of Summit.		1							
Third Street,										
north.	North line of east Third.		1							
Tilton.	East line of St. Peter.		1							
Tilton.	East line of Rice.		1							
Thomas.	West line of Como.		1							
Thomas.	West line of Gaultier.		1							
Thomas.	East line of Farrington.		1							



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Thomas.....	East and west line of Western.....			2						
Thomas.....	East line of Mackubin.....			1						
Thomas.....	East and west line of Dale.....			1						
Thomas.....	East line of Grotto.....			1						
Thomas.....	West line of Victoria.....			1						
Topping.....	West line of Como.....			1						
Topping.....	East line of Dale.....			1						
Taylor.....	West line of Pascal.....			1						
Taylor.....	West line of Simpson.....			1						
Taylor.....	East and west line of Snelling.....			1						
Territorial Road.....	West line of Raymond.....			1						
Territorial Road.....	East line of Cromwell.....			1						
Tatum.....	North line of Minnehaha.....			1						
University.....	South line of Valley.....				1					
University.....	B. O., 275 feet west of Canada.....	1								
University.....	On H., west of Ashton.....			1						
University.....	West line of Robert.....				1					
University.....	East and west line of Rice, M. & B. O.....	1			1	1				
University.....	West line of Gaultier.....			1						
University.....	East and west line of Western.....				2					
University.....	East line of Mackubin.....			1						
University.....	East and west line of Dale.....			1		1				
University.....	East line of St. Albans, on H.....	1								
University.....	East line of Grotto, on H.....	1								
University.....	East line of Avon, on H.....	1								
University.....	East and west line of Victoria, M. & H.....	1				2				
University.....	East line of Milton, on H.....	1								
University.....	East line of Chatsworth, on H.....	1								
University.....	East line of Oxford, on H.....	1								
University.....	East and west line of Lexington, M. & H.....	1				2				
University.....	East line of Dunlap, on H.....			1						
University.....	East line of Griggs, on H.....	1								
University.....	East line of Syndicate, on H. B.....			1						
University.....	East and west line of Hamline, M. & H.....	1				2				
University.....	East line of Albert, on H. B.....			1						
University.....	East line of Pascal, on H.....	1								
University.....	East line of Simpson, on H. B.....			1						
University.....	East line of Ashbury, on H. B.....			1						
University.....	East and west line of Snelling, M. & H.....	1				2				
University.....	East line of Fry, on H. B.....	1								
University.....	East line of Aldine, on H.....	1								
University.....	East line of Wheeler, on H.....	1								
University.....	East and west line of Fairview, M. & B. O.....	1				2				
University.....	East and west line of Prior, on M. & H.....	1				1				
University.....	East end of Transfer bridge, on H.....			1						
University.....	Center of Transfer bridge, on H.....			1						
University.....	West line of Cleveland, M. & H.....			2		1				
University.....	West line of Montgomery, on H.....			1						
University.....	West line of Vandalia, on H.....			1						
University.....	West line of Pillsbury, on H.....			1						
University.....	West line of Hersey, on H.....			1						
University.....	West line of LaSalle, on H.....			1						
University.....	West line of Clinton, on H.....			1						
University.....	East and west line of Raymond.....				1	1				
Valley.....	West line of Broadway.....				1					
Viola.....	West line of Cedar.....			1						
Viola.....	East line of Park.....			1						
Viola.....	East line of Rice.....			1						
Virginia.....	North line of Summit.....			1						
Virginia.....	South line of Selby.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3 Inch.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Virginia.....	North and south line of Dayton.....			2						
Virginia.....	North line of Nelson.....	1								
Virginia.....	South line of Iglehart.....	1								
Virginia.....	South line of University.....	1								
Virginia.....	North line of Thomas.....	1								
Virginia.....	North line of Lafond.....	1								
Virginia.....	North line of Blair.....	1								
Virginia.....	North line of Van Buren.....	1								
Virginia.....	South line of Como.....	1								
Victoria.....	North line of St. Clair, M. & H.....	1			1					
Victoria.....	North and south line of Summit.....				2					
Victoria.....	North line of Ashland on H.....	1								
Victoria.....	North and south line of Marshall, M. & H.....	1			2					
Victoria.....	North and south line of University.....				2					
Van Buren.....	West line of Western.....	1								
Van Buren.....	East line of Mackubin.....	1								
Van Buren.....	East and west line of Dale.....	2								
Van Buren.....	East line of Grotto.....	1								
Van Buren.....	East line of Aldine.....	1								
Van Slyke.....	West line of Chatsworth.....	1								
Van Slyke.....	West line of Argyle.....	1								
Van Slyke.....	West line of Horton.....	1								
Van Slyke.....	East line of Lexington.....	1								
Wabasha.....	North line of Iglehart.....	1								
Wabasha.....	North and south line of Central.....	1								
Western.....	South line of Holly, M. & B. O.....	2			1					
Western.....	North and south line of Dayton.....				1	1				
Western.....	North line of Rondo, M. & B. O.....	1			1					
Western.....	North line of University.....				1					
Western.....	B. O. at Sherburne.....	1								
Western.....	North line of Lafond.....				1					
Western.....	South line of Como.....				1					
Waltham.....	East line of Prior.....	1								
Williams.....	West line of Olive.....			1						
Williams.....	East line of Mississippi, D.H. & L.....	2								
Wilder.....	North line of Iglehart.....	1								
Wilder.....	North line of Carroll.....	1								
Wilder.....	South line of St. Anthony.....	1								
Whitall.....	East and west line of Edgerton.....	2								
Whitall.....	East line of Bradley.....	1								
Whitall.....	West line of Burr.....	1								
Walker.....	North line of Hewitt.....	1								
Wesley.....	West line of Pascal.....	1								
Wesley.....	West line of Snelling.....			1						
Workhouse.....	West line of Lexington.....			1						
Wheeler St.....	East line of Bayless.....			1						
Westminster.....	South line of Case.....			1						
Wheeler Ave.....	South line of University.....			1						
Woodbridge.....	South line of Front.....			1						
Winnipeg.....	East line of Rice.....			1						
White Bear.....	North line of Seventh.....			1						
White Bear.....	South line of Harvester.....			1						
Wells.....	West line of Greenbrier.....	1								
Wells.....	East line of Walsh.....	1								
Wells.....	West line of Arcade.....			1						
York.....	East and west line of Arcade.....			2						
York.....	West line of Greenbrier.....			1						
York.....	East and west line of Edgerton.....			2						
York.....	East line of Bradley.....			1						
York.....	East line of Clark.....			1						
York.....	East line of Cortland.....			1						
		23	109	887	132	67	30	9	4	2

Number of valves laid this year..... 50  
 Total number of valves on high service..... 1263

## LOCATION OF VALVES (HIGH SERVICE, WEST ST. PAUL.)

STREET.	LOCATION.	6 inch.	12 inch.	16 inch.
Baker.....	West line of Bidwell.....	1		
Baker.....	West line of Charlton.....	1		
Baker.....	East and west line of Manomin.....	2		
Baker.....	East line of Cherokee.....	1		
Belvedere.....	East line of Robert.....	1		
Bidwell.....	South line of Baker.....		1	
Bunker.....	West line of Mt. Hope.....	1		
Cherokee.....	South line of Winona.....	1		
Cherokee.....	North line of Belmont.....	1		
Cherokee.....	North line of Page.....	1		
Cherokee.....	North and south line of Baker.....	2		
Cherokee.....	North line of Stevens.....	1		
Curtis.....	West line of Mt. Hope.....	1		
Curtis.....	West line of Woodbury.....	1		
George.....	East and west line of Bidwell.....	2		
George.....	West line of Bellows.....	1		
George.....	West line of Waseca.....	1		
George.....	West line of Charlton.....	1		
George.....	West line of Ohio.....	1		
George.....	East and west line of Manomin.....	2		
Hall.....	North line of Morton.....	1		
Manomin.....	North line of Annapolis.....	1		
Manomin.....	South line of Sidney.....	1		
Manomin.....	South line of Baker.....	1		
Morton.....	East line of Hall.....		1	
Oakdale.....	North line of Gates.....	1		
Oakdale.....	North line of Page.....	1		
Oakdale.....	North line of Curtis, D. H. & L.....	1		
Ohio.....	North line of Belmont.....	1		
Ohio.....	North line of Page.....	1		
Ohio.....	North and south line of Baker.....	2		
Ohio.....	North line of Stevens.....	1		
Ohio.....	North line of Robie.....	1		
Orleans.....	North and south line of Baker.....	2		
Orleans.....	North line of Stevens.....	1		
Orleans.....	South line of Robie.....	1		
Page.....	East and west line of State, M. & H.....	2		
Page.....	East line of Oakdale.....	1		
Robert.....	North and south line of Page.....		2	
State.....	South line of Page.....		1	
Stryker.....	North and south line of Morton.....	2		
Total.....		37	8	5

Number of valves laid this year, 2. Total number of valves on high service West St. Paul, 50. Total number of valves on high, low and high service West St. Paul, 2,022.

Reference:—M., main; B. O., blow-off; H., on hydrant; H. B., on hydrant branch; D. H. and L., dividing between high and low service; B. W., by-way.





## INVENTORY OF STOCK AND TOOLS.—Continued.

32 shovels.  
43 picks.  
20 sand rock picks.  
12 sledge hammers.  
7 striking hammers.  
8 crow bars.  
13 rock drills.  
2 plug and feather drills.  
9 blasting chains.  
2 16-inch pipe chains.  
1 12-inch pipe chain.  
80 blasting timbers.  
4 set of caulking tools.  
1 pipe cutting machine.  
2 cast iron pipe cutters.  
4 spirit levels.  
9 dirt rammers.  
4 saws.  
1 ax.  
8 set of block and fall.  
200 feet of 1-inch rope.

## CONNECTION STOCK AND TOOLS.

2250 feet of  $\frac{3}{4}$  to 2 inch galvanized pipe.  
14 pair pipe tongs  $\frac{1}{2}$  to 2 inch.  
2 platform scales.  
4074 pounds  $\frac{1}{2}$  to  $1\frac{1}{2}$  inch lead pipe, extra strong.  
1 kit plumbing tools complete.  
2 Mueller tapping machines, complete.  
189 Bingham & Morgan stop boxes.  
102 Corporation cocks,  $\frac{1}{2}$  to 1 inch.  
86 stop and waste cocks.  
120 pounds of solder.  
12 stop cock rods for turning on and shutting off water.

## STABLE AND MISCELLANEOUS ACCOUNT.

4 horses.  
1 large truck for hauling 20 to 36 in. pipe.  
1 large truck for hauling 12 to 20 in. pipe.  
1 light truck.  
2 light wagons.  
2 buggies.  
1 light bob sleigh.  
3 cutters.  
4 set single harness.  
6 horse blankets.  
22 pair bedding blankets.  
4 robes.  
2 forks.  
Small quantity of feed for horses.  
1 anvil.  
20 jackscrows.  
1 farmer kettle.  
1 box wood stove.  
16 pair rubber boots.  
24 lanterns.  
120 pieces of sheeting 8 ft. long.  
8 pieces of timber 6x8, 16 ft. long.

4 pieces of timber 6x6, 12 ft. long.  
21 pieces of timber 2x8, 18 ft. long.  
10 wheelbarrows.  
1 grinding stone.  
3 drag forks.  
35 gallons black enamel paint for iron.

## MIDWAY STATION.

3 gate wrenches.

## HYDRANTS.

1 S. Mathew hydrant (for repair).  
5 hydrant wrenches.  
1 kit of tools for repairing hydrants.  
Miscellaneous lot of hydrant duplicates.

## PIPE-LAYING TOOLS.

1 tool box.  
2 lead ladles.  
1 lead pot.  
1 lead furnace.  
1 lead pot and furnace on wheels.  
2 derricks.  
8 shovels.  
6 picks.  
2 sledge hammers.  
1 striking hammer.  
1 crowbar.  
2 sets of caulking tools.  
1 spirit level.  
2 saws.  
300 pounds of pig lead.

## CONNECTION STOCK AND TOOLS.

1 kit plumbing tools.  
1 Mueller tapping machine.  
3 stop boxes.  
22 corporation cocks from  $\frac{3}{4}$  to 1 in.  
20 stop and waste cocks from  $\frac{3}{4}$  to 1 in.  
2 stop cock rods for turning on and shutting off water.  
1 valve rod for turning on and shutting off water.

## STABLE AND MISCELLANEOUS ACCOUNT.

1 horse.  
1 light truck.  
1 light bob sleigh.  
1 set single harness.  
1 horse blanket.  
1 fork.  
8 lanterns.  
1 wheelbarrow.  
1 grinding stone.  
1 scythe.  
2 block and falls.  
3 dirt scrapers.

## OFFICE OF CITY ENGINEER.

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ST. PAUL, MINN., December 1, 1895.

*To the Board of Water Commissioners:*

GENTLEMEN:—I submit herewith my report of the work under charge of the Engineering Department for the Board of Water Commissioners during the fiscal year ending November 30, 1895.

### CONTRACT WORK.

The following contracts for the St. Paul Water Works have been executed under the supervision of the Engineering Department:

Million & Young—

44,197 feet of waterpipe, laying new mains, and relaying old ones. Contract finished this year. Total.....\$9,796.13

The Moran Construction Company—

275.4 lineal feet of sandrock tunnel and seven manholes. Contract finished this year. Total..... \$975.40

Patrick Doherty—

9,231.5 feet of 30-inch pipe with connections, etc. Contract finished this year. Total.....\$4,258.25

Patrick Thornton—

Open ditch north of Pleasant Lake and structures in connection with it. Work commenced in 1894 and finished this year.

Total contract price.....\$3,790.89

Fencing of water works right-of-way. Contract finished this

year. Total.....\$1,726.13

Ransome Subway Company—

Concrete conduit from Otter Lake and structures in connection therewith. Total contract price.....\$8,910.00

Estimates allowed in 1895.....\$6,477.00

Charles Stone—

Pumpwell and connection of artesian wells at Vadnais Lake.

Total contract price.....\$3,875.00

Estimates allowed.....\$2,295.00

E. P. Allis & Co.—

Five million gallon pump at Vadnais Lake. Contract price.....\$7,500.00

Estimates allowed .....\$3,750.00

In addition to contract work \$1,466.42 has been expended under the direction of the Engineering Department in cleaning out the ditch north of Pleasant Lake, putting in a wooden flume and building a concrete culvert, the work being done by days labor. I submit herewith plans of a concrete culvert built under a roadway on the line of the above mentioned ditch. The cost of the culvert was \$11.20 per lineal foot.

#### OTTER LAKE CONDUIT.

The completion of the conduit to Otter Lake which will be accomplished during the month of December will make available a large emergency storage supply from this lake which is particularly valuable at the present time, as the rain fall for the last three years has been considerably below normal, and as a consequence the Vadnais Lake system, and also the Rice Lake system, are very low. After Otter Lake has been drawn down a ditch can be readily dug from this lake to Bald Eagle Lake, and the overflow of Bald Eagle, which during the spring time is quite large, can readily be drawn into the Vadnais Lake system, thereby saving the cost of pumping over from the Rice Lake system, into which Bald Eagle Lake naturally outlets. This conduit is thirty-six inches in diameter, and is designed to discharge 10,000,000 gallons in twenty-four hours when running full. It is constructed of Portland cement concrete in accordance with the "Ransome System," which makes a continuous conduit by using a mold, which during construction is drawn slowly forward with just enough speed as to allow the workmen to properly tamp the concrete and place the forms, which are left in until the concrete has properly set.

#### VADNAIS LAKE PUMPING PLANT.

The new pumping plant at Vadnais Lake, which will probably be in operation in the latter part of December, will make available the artesian well system at that point for a daily supply of five million gallons. The new pumping plant is of the most approved machinery, and will undoubtedly reduce about 70 per cent the cost per million gallons of water obtained from this source of supply at this point. The general plan of the location of the wells and the method of connecting with the pumping engines is herewith submitted and made a part of this report.

#### WATER PRESSURE ON HIGH SERVICE.

The completion of the 30-inch distribution main from the high service reservoir to Front street has entirely removed the difficulty experienced last year from lack of pressure on the high service system during the hours of greatest consumption in July and August. The change in the location of the main from Rice street to Dale street, as previously recommended, was made, after careful investigation, on account of changes which were required in the distribution system if the main was placed on Rice street.

#### WATER CONSUMPTION.

A very careful record has been kept of the amount of water obtained from



the various sources of supply and the amount of water used on both the high and low service. The figures show a gradual yearly increase. The daily average supply of 8,251,226 gallons is very creditable, as showing the excellent management of the service and the great care taken to prevent the waste of water. This gives a rate of consumption per capita of fifty-eight gallons, a result obtained by but few American cities. The Venturi meter, placed last year on the Lake Phalen system, enables us to give accurately the amount of water used from this source of supply, which amounts this year to 459,465 gallons per day. This does not utilize the supply from that source to the greatest extent, the system being capable of supplying double that amount of water. By making some changes in the distribution pipes an additional area can be supplied from this source when occasion demands, with but little expense. As this subject has already been taken under consideration by the board no recommendation appears necessary. The accompanying table gives by months a detailed report of amount of water consumed and the source of supply from which the water is taken.

## COST OF PUMPING.

At each pumping station a careful record has been kept of the cost of running the plant, including the salaries, fuel, waste, oil and repairs, and the following tables are submitted as giving the cost of the several stations. The results are slightly better than obtained last year.

## M'CARRON LAKE PUMPING STATION.

Total number of gallons pumped.....1,518,464,600 gallons.  
Total amount of coal consumed.....2,520,872 pounds.

	GALLONS.	POUNDS OF COAL.	NO. OF GALLONS PER POUND OF COAL.
Pump No. 1 and 2.	100,378,800	214,705	468
Pump No. 3.....	1,418,085,800	2,306,167	615

Average duty during the year for the whole plant.....74,451,656  
Average duty during the year for engines No. 1 and 2.....76,003,243  
Average duty during the year for engine No. 3.....57,785,677

		COST OF RAISING 1,000,000 GAL- LONS 1 FOOT.
Salaries for 1895.....	\$3,652.00	\$0.016,208
Fuel.....	5,034.79	0.022,345
Waste, oil and repairs.....	517.86	0.002,298
	<u>\$9,204.65</u>	<u>\$0.040,851</u>



## PUMP STATION AT BALDWIN LAKE.

		COST OF RAISING 1,000,000 GAL- LONS 1 FOOT.
Salaries for 1895.....	\$1,450.00	\$0.032713
Fuel.....	2,070 71	0.046718
Waste, oil and repairs.....	96.04	0.002167
	<u>\$3,616.70</u>	<u>\$0.081598</u>

Amount of water pumped.....1,641,596,000 gallons.

190 cords mixed wood, 1250 pounds coal.....237,500 coal equivalent.

555 cords black oak, 1500 pounds coal.....832,500 coal equivalent.

1,070,000

Duty average for the year.....34,505,762

## WEST ST. PAUL PUMP STATION.

Amount of water pumped.....10,539,160 gallons.

Amount of fuel consumed..... 174,460 pounds.

Average rate of pumping..... 1,073,000 in 24 hours.

Average duty during the year.....10,516,920

		COST OF RAISING 1,000,000 GAL- LONS 1 FOOT.
Salaries for 1895.....	\$1,320.00	\$0.5993
Fuel.....	239.00	0.1085
Waste, oil and repairs.....	40.82	0.0185
	<u>\$1,599.82</u>	<u>\$0.7263</u>

## WELLS AT VADNAIS LAKE.

Amount of water pumped.....237,043,000 gallons.

Amount of coal consumed..... 550,000 pounds.

Average duty during the year..... 8,619,400

		COST OF RAISING 1,000,000 GAL- LONS 1 FOOT.
Salary.....	\$848.30	\$0.1491
Fuel.....	1,105.50	0.1943
Waste, oil and repairs.....	90.64	0.0159
	<u>\$2,044.44</u>	<u>\$0.3593</u>

A record has been kept of the elevation of the lakes during the different months of the year, diagrams of which are hereby submitted on separate sheets. No water has been wasted from the Vadnais Lake system and none from the Rice Lake system except what may have seeped through the dam constructed at this point to hold back the water. At the end of the season all the lakes except Vadnais are left lower than usual.

The following table gives the precipitation at St. Paul for the different months of the fiscal year ending November 30th, 1895, the total rain fall being 25.4, or about 1.9 inches below the normal. These figures are obtained through the courtesy of Mr. P. F. Lyons of the signal service office at St. Paul:

December, 1894.....1.53	April.....2.09	August.....2.59
January, 1895.....1.05	May.....2.89	September.....4.75
February, 1895.....0.42	June.....4.18	October.....0.09
March, 1895.....0.85	July.....4.12	November.....0.85

#### ARTESIAN WELL AT CENTERVILLE.

To still further investigate what might be obtained from artesian wells at Centerville as a source of water supply, in addition to the two wells already sunk, a 12-inch well was put down during the past season. The following is a record of the strata through which the well was sunk:

STRATA.	TOTAL DEPTH	REMARKS.
4 feet black muck.....		
8 feet blue clay.....	12	
30 feet sandy clay.....	42	
10 feet hard pan.....	52	
20 feet sand and gravel.....	72	Water commenced to flow.
10 feet clay.....	82	
12 feet fine sand.....	94	
33 feet lime rock.....	127	
7 feet soft plain sand.....	134	Well reduced to ten inches in diameter.
127 feet hard lime rock.....	261	
87 feet sand rock.....	348	Water increased to present flow.
79 feet blue shale.....	427	

The flow from this well was measured and found to be at the rate of 492,000 gallons in twenty-four hours, the well discharging from the surface of the ground at elevation 189. The capacity of the well was further tested by pumping with the following results: Drawing the well down to elevation 178.5 the discharge was 1,228,500 gallons. At elevation 183, the discharge was 947,700 gallons. The top of the casing is at elevation 183.4.

These results are quite satisfactory, and it would appear that there should be no difficulty in obtaining a supply of 10,000,000 gallons per day from a system of wells located at this point, somewhat similar to the construction of the system now in use at Vadnais Lake.

## FUTURE EXTENSION.

The necessity of extensions to the present water supply has been so apparent that much time and attention has been given to the subject during the last two years, and several reports have been made and submitted to the board.

While considerable has been done during the past year in constructing the conduit to Otter Lake, and in increasing and perfecting the artesian well supply at Lake Vadnais Station, still, in consideration of the low condition of the lakes from which we draw our present supply, and from the possibility that the dry season will continue over a series of years, I would strongly recommend to the board that during the next year a conduit be constructed from the junction chamber in the Otter Lake conduit to Centerville Lake, and that a pumping plant of at least 10,000,000 gallons capacity be erected at that point to deliver water both from the Centerville Lake and from the artesian wells to be sunk at that point. Plans of the necessary land to be taken, and estimates of cost have already been submitted to the board, and I think no time should be lost in making these extensions.

I would also recommend that a contract be let for an additional pump at McCarrons Lake of about 10,000,000 gallons capacity, together with the necessary boiler plant, and I would further recommend that a new force main be laid from McCarrons Lake pumping station to the reservoir, as the present force main has become too small for efficient use when the pumps are running at the greatest capacity.

As a matter of record I submit the following elevations (city base), which have been carefully established at various places on the water works system, which I think will be found useful for future reference.

## WATER WORKS ELEVATIONS.

## M'CARRON LAKE PUMP STATION.

	Elevations.
B. M. on top of stone wall, E. side entrance to pump house.....	169.81
Center of water guage on 6,000,000-gallon pump.....	175.75
Center of water guage on 4,000,000-gallon pump.....	181.56
Center of water guage on 2,000,000-gallon pump.....	175.47
On floor of pump house.....	169.78
O on guage in keeper's house, H. S. reservoir.....	290.22

## WEST ST. PAUL.

B. M. on W. table of pump house, n. w. cor.....	149.17
Center of water guage on pumping engine.....	155.58
Floor of water tank inside.....	343.20
O on guage on tank.....	362.87
Top of cap stone, n. w. pier tank foundation.....	328.89



## VADNAIS LAKE.

B. M. on W. table, e. side doorway of intake chamber.....  
 O on intake chamber.....  
 O on guage 12 75 above actual zero.....  
 Top outlet of lake.....  
 Bottom of conduit, intake chamber.....

## PLEASANT LAKE.

B. M. center of top of stone monument at outlet of Pleasant Lake..  
 O on guage in flume at outlet.....

## BALDWIN LAKE.

B. M. on oak tree in meadow 200 feet w. of pump house.....  
 O on guage in flume.....

## CENTERVILLE LAKE.

B. M. on cottonwood about 400 feet s. of La Mont's barn.....  
 O on guage under bridge at P. Paul's.....  
 B. M. on ash tree 250 feet n. w. of bridge near P. Paul's.....

## LAKE PHALEN.

B. M. on brick door sill, under lower hinge of iron door.....  
 Top of pipe at intake chamber.....  
 O in intake chamber.....  
 O on guage, 5.92 above actual zero.....  
 Dam at outlet of Phalen.....

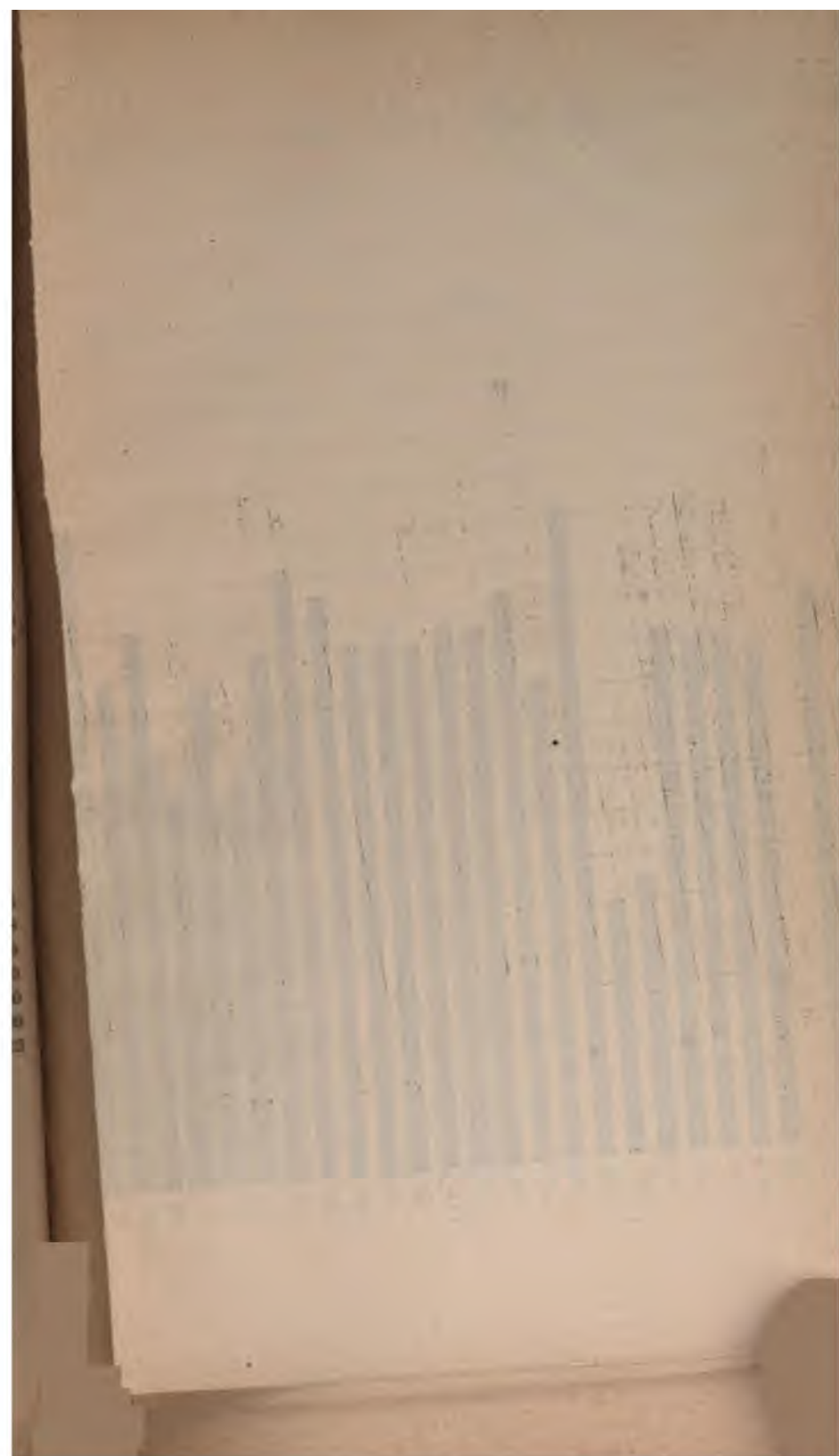
## OTTER LAKE CONDUIT.

Crest of terminal weir.....  
 Bottom of conduit at terminal weir.....  
 Bottom of conduit at junction chamber.....  
 Bottom of conduit at intake chamber.....  
 Bottom of intake flume.....  
 Bottom of intake chamber.....  
 Floor of intake chamber.....

All of which is respectfully submitted.

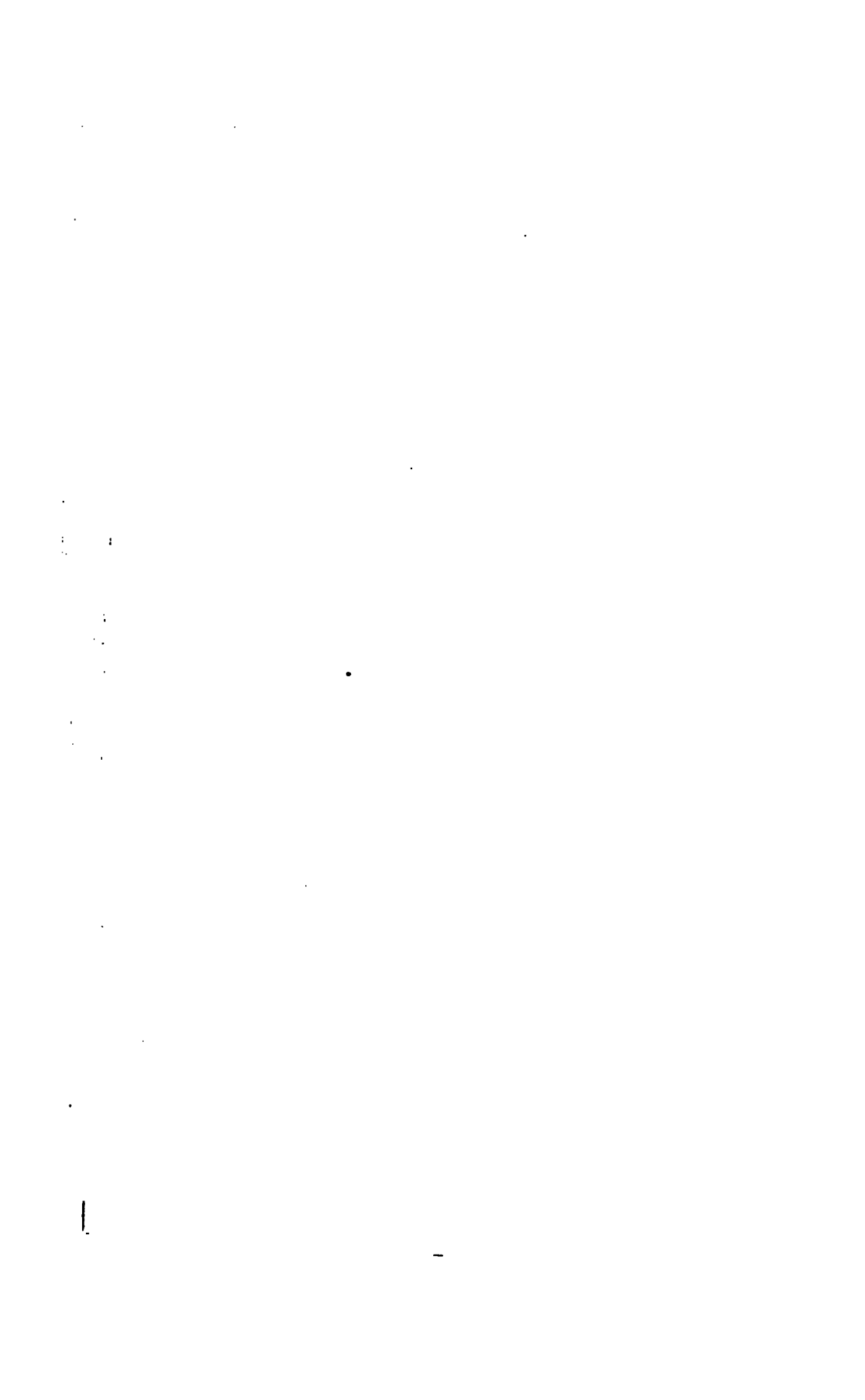
L. W. RUNDLET  
 City Eng

















## CHIEF ENGINEER'S REPORT.

ST. PAUL, December, 1895.

*To the President and Members of the Board of Water Commissioners.*

I respectfully submit to your honorable board my Eleventh Annual Report of the operation of the pumping stations for the year ending November 30, 1895.

McCarron Lake Station engines and boiler have not required any repairs during the year 1895 except in changing the valve on 3½-million pump, and take out the old large valves, 16 in number, and replace 300 2¼ inch rubber valves, the same increasing 20 per cent more water and higher duty, and changing Jet Condenser to Surface Condenser, thereby saving 115,000 gallons per day.

Boiler and pumps at Baldwin Lake have given good satisfaction during the year and have not required any repairs.

West Side station has been in continual operation during the year without any repairs on boiler or pumping machinery.

Vadnais Lake station has been running from July 8th to November 27, 1895.

The following tabulated record shows the operation at the different pumping stations:

### M'CARRON LAKE STATION.

Total gallons pumped.....	1,536,912,600
Daily average gallons pumped.....	4,210,719
Total pounds coal used.....	2,536,020
Daily average coal used.....	6,948
Daily increase since 1894..... gallons	328,609

### BALDWIN LAKE STATION.

Total number of gallons pumped.....	1,914,949,800
Daily average of gallons pumped.....	8,824,653
Total cords wood used.....	821
Daily average cords wood used.....	4

### WEST SIDE STATION.

Total number of gallons pumped.....	10,529,640
Daily average of gallons pumped.....	28,848
Total pounds coal used.....	174,600
Daily average pounds coal used.....	479
Daily increase since 1894..... gallons	3,858

Respectfully submitted,

MARTIN FEIST,  
Chief Engineer.

# ST. PAUL WATER WORKS' PUMPING STATION AT MCCARRON LAKE.

ENGINEER'S REPORT FOR THE YEAR ENDING NOVEMBER 30, 1895.

MONTHS.	NUMBER OF HOURS PUMPED.			NUMBER OF REVOLUTIONS.			NUMBER OF GALLONS PUMPED.			Total Per Month Pumped. Engines Nos. 1, 2 and 3.	Average coal used per day pumped.	Total coal used per month.	Average lbs. of coal used per day.	Water Recd. per day.
	Eng. No. 1.	Eng. No. 2.	Eng. No. 3.	Engine No. 1.	Engine No. 2.	Engine No. 3.	Engine No. 1.	Engine No. 2.	Engine No. 3.					
Dec., 1894	85½		645½		184,000	640,000			12,512,000	91,520,000	104,032,000	3,355,873	186,037	6,001
Jan., 1895	25	173	546	63,600	383,600	590,500	2,035,200		26,084,800	112,561,500	112,561,500	3,631,016	220,143	7,101
Feb., 1895			655			779,700				111,497,100	111,497,100	3,982,039	197,498	7,053
Mar., 1895			702			774,100				110,696,300	110,696,300	3,570,848	195,090	6,293
Apr., 1895			712½			771,200				110,281,600	110,281,600	3,576,053	184,323	6,144
May, 1895		205	537		413,200	511,000			28,097,600	73,073,000	115,470,600	3,724,858	195,491	6,306
June, 1895			702			895,900				128,113,700	128,113,700	4,270,456	202,044	6,734
July, 1895	42	60	678	80,300	120,800	1,016,400	2,588,800	8,214,400		145,345,200	156,148,400	5,037,045	241,301	7,783
Aug., 1895	67	129	595	160,900	240,500	984,000	5,148,800	16,354,000		140,712,000	162,214,800	5,232,735	268,499	8,681
Sept., 1895			700			994,600				142,227,800	142,227,800	4,740,926	224,045	7,468
Oct., 1895		3	731			926,200			442,000	132,446,800	132,888,000	4,286,729	205,775	6,641
Nov., 1895			720		6,500	925,400				132,332,200	132,332,200	4,411,073	215,774	7,192
Total...	134	855½	7,923½	305,400	1,348,600	9,809,200	9,772,800	31,704,800	1,435,435,000	1,536,912,600	4,210,719	2,536,020	6,948	167

Total gallons pumped..... 1,536,912,600  
Daily average pumped..... 4,210,719  
Total pounds coal used..... 2,536,020  
Daily average coal used..... 6,948  
Daily increase since 1894..... 328,609 gallons.



## ST. PAUL WATER WORKS' PUMPING STATION BALDWIN LAKE.

ENGINEER'S REPORT FOR THE YEAR ENDING NOVEMBER 30, 1895.

MONTHS.	Number of Hours Pumped.	Total Number of Revolutions.	Total number of gallons Pumped.	Daily Average Gallons Pumped.	Total Cords Wood Used.	Daily Average Cords Wood Used.	Water Pressure.
Dec., 1894	690	1,205,800	274,922,400	9,480,082	76½ 79,200 lbs.coal	.....	26,429 ft
Jan., 1895	.....	.....	.....	.....	.....	.....	.....
Feb., 1895	.....	.....	.....	.....	.....	.....	.....
Mar., 1895	.....	.....	.....	.....	.....	.....	.....
Apr., 1895	.....	.....	.....	.....	.....	.....	.....
May, 1895	187	358,200	81,669,600	10,208,700	34	4¼	.....
June, 1895	709	1,390,500	317,034,000	10,567,800	138½	4½	.....
July, 1895	734½	1,462,500	316,900,000	10,222,580	136½	4½	.....
Aug., 1895	714	1,261,300	274,963,400	8,869,787	133¾	4½	.....
Sept., 1895	716	1,055,200	230,033,600	7,667,786	93¾	3	.....
Oct., 1895	744	1,269,300	273,968,800	8,837,703	123¼	4	.....
Nov., 1895	714	808,800	145,458,000	4,848,600	85	2¾	.....
Total.....	5,208½	8,810,900	1,914,949,800	8,824,653	821¾	4	26,429 ft
Total number of gallons pumped.....1,914,949,800							
Daily average gallons pumped.....				8,824,653			
Total cords wood used.....				821			
Total pounds coal used.....				79,200			
Daily average cords wood used.....				4			

## ST. PAUL WATER WORKS' PUMPING STATION, WEST SIDE.

ENGINEER'S REPORT FOR THE YEAR ENDING NOVEMBER, 30, 1895.

Months.	Number of hours pumped.	Total number of revolutions.	Total number of gallons pumped.	Average per day pumped.	Total pounds of coal used.	Average coal used per day.
Dec., 1894	7.26	18,670	336,060	10,840	13,350	431
Jan., 1895	9.30	23,570	424,260	13,685	15,550	502
Feb., 1895	14.40	36,830	662,940	23,676	15,300	546
Mar., 1895	9.28	23,170	417,060	13,453	13,200	419
Apr., 1895	10.55	26,950	485,100	16,170	11,300	377
May, 1895	16.04	39,770	715,860	23,092	12,670	409
June, 1895	21.47	53,940	970,920	32,364	13,210	440
July, 1895	29.38	73,650	1,325,700	42,764	15,220	491
Aug., 1895	31.49	78,980	1,421,640	45,859	15,850	511
Sept., 1895	32.14	80,120	1,442,160	48,072	15,950	531
Oct., 1895	31.13	76,870	1,383,660	44,634	17,500	564
Nov., 1895	21.16	52,460	944,280	31,476	15,500	517
Total..	236.	584,980	10,520,640	28,848	174,600	479

Total number of gallons pumped.....	10,520,640
Daily average gallons pumped.....	28,848
Total pounds of coal used .....	174,600
Daily average coal used.....	479
Daily increase since 1894.....	3,858

INVENTORY OF TOOLS AND STOCK AT McCARRON LAKE STATION.  
NOVEMBER 30, 1895.

1	Vise.	1	writing desk.
1	set of screw dies and taps from $\frac{1}{4}$ inch to 1 inch.	6	electric lamps.
1	set of pipe dies and taps from $\frac{1}{4}$ inch to 2 inches.	1	24-inch square.
2	pipe cutters.	2	chairs.
1	pair 2-inch pipe tongs.	2	ladders.
1	24-inch pipe wrench.	2	step ladders.
1	12-inch pipe wrench.	1	good cupboard.
1	24-inch Coe's wrench.	1	oil and waste cupboard.
1	14-inch Coe's wrench.	1	work bench.
1	8-inch Coe's wrench.	6	cuspidors.
1	portable blacksmith forge.	1	ratchet.
1	anvil.	1	ratchet brace and bit.
1	sledge hammer.	4	tack screws.
2	hand hammers.	75	feet $\frac{3}{4}$ inch rope and block.
1	soft hammer.	1	draw knife.
6	files.	1	planer.
2	saws.	6	chisels.
1	ax.	1	Edison recording gauge.
1	hatchet.	1	Thompson's indicator.
1	1 $\frac{1}{2}$ -ton chain block.	1	lot of old pipe and fittings.
1	3-ton chain block.	1	gate wrench.
50	ft. $\frac{1}{4}$ -inch rubber hose.	3	steel brooms.
3	oil tanks.	1	pair rubber boots.
2	2-quart oil cans.	150	pounds waste.
2	3-quart oil cans.	5	pounds tallow.
4	hand oilers.	30	pounds hemp packing.
1	quart measure.	43	gallons engine oil.
1	12-inch level.	6	gallons cylinder oil.
1	steel coal wheel barrow.	45	gallons kerosene oil.
3	coal scoops.	3	pounds polishing paste.
2	coal hammers.	93	tons Yough. coal.
1	Fairbank 6-ton.	40	pounds blacksmith coal.
1	Fairbank 1000-pound scale.	50	bars soap.
1	grind stone.	1	stove and pipe at the terminal chamber
3	large lanterns.	3	brooms.
4	small lanterns.	4	shovels.
1	clock.	2	water pails.
		1	Concord buggy.

INVENTORY OF STOCK AND TOOLS AT THE WEST SIDE STATION.  
NOVEMBER 30, 1895.

1	24-inch pipe wrench.	1	step ladder.
1	14-inch Coe's wrench.	1	set engineer 5. piece brass hand oilers.
1	hand saw.	2	$\frac{1}{2}$ -gallon measures.
1	ax.	2	hand oilers.
1	hatchet.	1	set of wrenches for pumps.
3	oil tanks.	1	set fire tools.
1	1000-pound Fairbanks scale.	50	feet of 1-inch rubber hose.
1	vise.	25	feet $\frac{3}{4}$ -inch steam hose.
1	work bench.	29	tons Yough. coal.
2	coal shovels.	$\frac{1}{2}$	cord slabs.
1	wardrobe.	44	gallons engine oil.
1	clock.	32	gallons cylinder oil.
3	large lanterns.	14	gallons kerosene oil.
1	writing desk.	3	pound waste.
2	chairs.	1	lawn mower.
1	gate wrench.	1	hay rack.
1	steel coal wheel barrow.	1	flue cleaner.
1	cuspidor.		

**INVENTORY OF STOCK AND TOOLS AT BALDWIN LAKE STATION  
NOVEMBER 30, 1895.**

1 vise.	1 3 $\frac{1}{4}$ -inch steam flue cleaner.
1 pair pipe tongs.	1 4-inch steam flue cleaner.
1 24-inch wrench.	50 feet 1 $\frac{1}{2}$ inch rubber hose.
1 12-inch wrench.	1 pair rubber boots.
1 24-inch Coe's wrench.	1 3 $\frac{1}{4}$ -inch auger.
1 14-inch Coe's wrench.	1 2-inch auger.
1 6-inch Coe's wrench.	2 crowbars.
1 hand hammer.	17 gallons kerosene oil.
1 coal hammer.	20 gallons engine oil.
1 saw.	20 gallons cylinder oil.
1 hatchet.	150 cords of wood.
1 ax.	7 pounds waste.
3 oil tanks.	5 pounds hemp packing.
2 1-quart cans.	5 pounds piston rod packing.
1 quart measure.	12 brass springs.
1 steel coal wheelbarrow.	2 gate wrenches.
2 coal scoops.	200 R. R. rails.
1 grindstone.	1 wheel push car.
3 large lanterns.	1 No. 10 centrifugal pump.
2 bracket lamps.	• 2 pieces 10-inch pipe 6 feet long.
3 hand lanterns.	2 pieces 10-inch pipe 5 feet long.
1 clock.	2 10 inch cills.
1 draw knife.	1 forge pump.
1 ice chisel.	2 steel brooms.
1 pair ice tongs.	12 12-inch square timbers.
1 ice scoop.	6 chisels.
1 ratchet brace and bit.	4 files.
1 chain.	2 calking tools.
1 2-ton chain block.	

**INVENTORY OF STOCK AND TOOLS AT VADNAIS LAKE.  
NOVEMBER 30, 1895.**

**GATE HOUSE.**

4 storm windows.  
4 window screens.  
2 brooms.  
1 steel broom.  
1 shovel.  
1 galvanized pail.  
1 ice chisel.  
1 ice saw.  
8 steel traps.  
1 gate wrench.  
1 gate lock and key.  
1 boat chain.  
1 row boat.  
1 pair oars.  
1 pair rubber boots.

**DWELLING HOUSE.**

15 storm windows.  
13 window screens.  
2 screen doors.  
12 window shades.  
1 thermometer.  
1 hand pump.  
1 kalsomine brush.  
2 storm doors.  
2 ventilators for chimneys.

**PUMPING STATION.**

2 monkey wrenches.  
2 S wrenches.  
1 combination wrench.  
2 cold chisels.  
4 files.

2 hammers.  
2 hand lanterns.  
2 large globe lanterns.  
1 spirit level.  
3 paint brushes.  
1 hand saw.  
3 oil cans.  
2 5-gallon oil cans.  
3 50-gallon oil tanks.  
1 steam flue cleaner.  
1 3-inch steel flue cleaner.  
10 gallons cylinder oil.  
10 gallons engine oil.  
4 tons coal.  
2 8-inch iron flanges.  
3 8-inch iron elbows.  
50 feet 4-inch wrought iron pipe.  
145 feet 8-inch wrought iron pipe.  
18 feet 6-inch wrought iron pipe.  
1 pick.  
1 shovel.  
50 feet rubber hose.  
1 6-inch spreader.  
2 scoop shovels.  
1 coal hammer.  
2 head-light lamps.  
1 vise.  
1 steel coal wheelbarrow.  
1 1384 scale.  
1 glass oil can.  
1 grindstone.  
1 ax.  
1 grub hoe.  
1 brush hook.  
1 block plane iron.  
1 draw knife.  
1 tray of brass oilers, 5 pieces



## INVENTORY OF STOCK AND TOOLS AT RESERVOIR.

4 chairs.  
1 rocker.  
1 rug, 7x9 feet.  
1 table.  
3 window shades.  
4 cellar storm windows.  
12 storm windows.  
3 shovels.  
4 picks.  
1 lawn mower.  
1 scythe.  
10 scythe stones.  
10 window screens.  
1 pail.  
1 grindstone.

2 gate wrenches.  
1 air vent wrench.  
1 plow.  
2 sets of sprinkling hose.  
1 sickle.  
2 storm doors.  
1 coal stove.  
1 sledge.  
2 rakes.  
1 fork.  
60 feet of rope.  
1 spade.  
1 hoe.  
1 stop wrench.  
1 paint brush.

<b>Balance on hand December 1st, 1894.....</b>		<b>\$52</b>
<b>Dec. 1, 1894, John Caulfield, Secretary.....</b>	<b>\$</b>	<b>1,000.00</b>
" 8, " " .....		1,000.00
" 14, " " .....		1,000.00
" 18, " " .....		1,000.00
" 21, " " .....		2,000.00
" 22, " " .....		2,000.00
" 27, " " .....		1,000.00
<b>Jan. 3, 1895,</b>		<b>2,000.00</b>
" 7, " " .....		10,000.00
" 11, " " .....		10,000.00
" 15, " " .....		2,000.00
" 19, " " .....		2,000.00
" 24, " " .....		1,000.00
" 29, " " .....		1,000.00
<b>Feb. 9, " "</b>		<b>2,000.00</b>
" 12, " " .....		1,000.00
" 16, " " .....		1,000.00
" 19, " " .....		1,000.00
" 20, " " .....		2,000.00
" 25, " " .....		2,000.00
" 26, " " .....		1,000.00
" 27, " " .....		2,090.00
" 28, " " .....		3,000.00
<b>Mar. 6, " "</b>		<b>10,000.00</b>
" 8, " " .....		10,000.00
" 12, " " .....		5,000.00
" 14, " " .....		2,000.00
" 18, " " .....		2,000.00
" 21, " Water frontage.....		18,629.76
" 25, " John Caulfield, Secretary.....		2,000.00
" 30, " " .....		2,000.00
<b>Apr. 6, " "</b>		<b>2,000.00</b>
" 9, " " .....		1,000.00
" 15, " " .....		1,000.00

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Apr. 18,	1895, Water frontage.....	\$625.00
" 19,	John Caulfield, Secretary.....	1,000.00
" 22,	" " " " " " " " " " " "	3,000.00
" 25,	" " " " " " " " " " " "	1,000.00
" 30,	" " " " " " " " " " " "	2,000.00
May 6,	" " " " " " " " " " " "	1,000.00
" 7,	" " " " " " " " " " " "	1,000.00
" 9,	" " " " " " " " " " " "	1,000.00
" 10,	" " " " " " " " " " " "	3,000.00
" 18,	" " " " " " " " " " " "	1,000.00
" 20,	" " " " " " " " " " " "	1,000.00
" 24,	" " " " " " " " " " " "	1,000.00
June 4,	" " " " " " " " " " " "	1,000.00
" 5,	" " " " " " " " " " " "	1,000.00
" 8,	" " " " " " " " " " " "	1,000.00
" 13,	" " " " " " " " " " " "	1,000.00
" 17,	" " " " " " " " " " " "	1,000.00
" 22,	" " " " " " " " " " " "	1,000.00
" 25,	" " " " " " " " " " " "	1,000.00
" 29,	" " " " " " " " " " " "	1,000.00
July 1,	" " " " " " " " " " " "	2,000.00
" 6,	" " " " " " " " " " " "	5,000.00
" 8,	Water frontage.....	15,000.00
" 10,	John Caulfield, Secretary.....	10,000.00
" 12,	" " " " " " " " " " " "	5,000.00
" 16,	" " " " " " " " " " " "	5,000.00
" 19,	" " " " " " " " " " " "	2,000.00
" 24,	Water frontage.....	100,000.00
" 25,	John Caulfield, Secretary.....	1,000.00
" 27,	" " " " " " " " " " " "	1,000.00
" 31,	" " " " " " " " " " " "	2,000.00
Aug. 3,	Tax receipts.....	5,476.29
" 8,	John Caulfield, Secretary.....	1,000.00
" 12,	" " " " " " " " " " " "	1,000.00
" 16,	" " " " " " " " " " " "	1,000.00
" 19,	" " " " " " " " " " " "	2,000.00
" 21,	" " " " " " " " " " " "	1,000.00
" 24,	" " " " " " " " " " " "	2,000.00
" 29,	" " " " " " " " " " " "	2,000.00
" 31,	" " " " " " " " " " " "	2,000.00
Sept. 7,	" " " " " " " " " " " "	10,000.00
" 10,	" " " " " " " " " " " "	10,000.00
" 12,	" " " " " " " " " " " "	2,500.00
" 14,	" " " " " " " " " " " "	6,000.00
" 17,	" " " " " " " " " " " "	2,500.00
" 21,	" " " " " " " " " " " "	2,000.00
" 26,	" " " " " " " " " " " "	1,000.00
" 30,	" " " " " " " " " " " "	2,000.00
Oct. 1,	" " " " " " " " " " " "	1,000.00
" 8,	" " " " " " " " " " " "	1,000.00
" 9,	" " " " " " " " " " " "	1,000.00
" 14,	" " " " " " " " " " " "	1,000.00
" 16,	" " " " " " " " " " " "	1,000.00
" 21,	" " " " " " " " " " " "	1,000.00
" 25,	" " " " " " " " " " " "	1,000.00
" 31,	" " " " " " " " " " " "	2,000.00
Nov. 8,	" " " " " " " " " " " "	1,000.00
" 11,	" " " " " " " " " " " "	1,000.00
" 14,	Water frontage.....	7,440.35
" 18,	John Caulfield, Secretary.....	1,000.00

Nov. 20, 1895, John Caulfield, Secretary .....	\$1,000.00
" 23, " " " " .....	1,000.00
" 25, " " " " .....	1,000.00
" 29, " " " " .....	2,352.66
<b>Total.....</b>	<b>\$358,524.06</b>
	<b>\$411,336.23</b>

## DISBURSEMENTS.

Dec., 1894, to cash.....	\$21,223.47
Jan., 1895, " .....	13,152.70
Feb., " " .....	12,343.54
March, " " .....	30,836.92
April, " " .....	14,862.01
May, " " .....	35,900.54
June, " " .....	37,755.16
July, " " .....	48,710.95
Aug., " " .....	70,773.43
Sept., " " .....	35,523.75
Oct., " " .....	23,013.38
Nov., " " .....	18,569.16
Balance on hand Dec. 1, 1895.....	\$362,665.01
<b>Total.....</b>	<b>\$48,671.22</b>
	<b>\$411,336.23</b>

## WATER DEPARTMENT SINKING FUND.

## RECEIPTS.

By balance Dec. 1, 1894.....	\$3,907.07
1895.	
Jan. 15, by certificates of indebtedness department..	\$1,695.00
Feb. 15, " " " " ..	765.00
March 14, " " " " ..	1,590.00
May 15, " " " " ..	3,405.00
June 14, " " " " ..	1,017.50
June 14, by redeemed tax levy certificate of indebtedness.....	55,000.00
July 8, by cash.....	25,000.00
July 18, by redeemed tax levy certificate of indebtedness.....	163,500.00
July 18, by certificates of indebtedness department....	2,835.00
Aug. 13, by certificate of indebtedness department....	50,000.00
Sept. 21, by redeemed tax levy certificates of indebtedness.....	30,600.00
Sept. 21, By certificates of indebtedness department..	962.50
<b>Total.....</b>	<b>\$335,770.00</b>
	<b>\$339,677.07</b>

## DISBURSEMENTS.

1894.	
Dec. 14, To Broadway bridge.....	\$1,000.00
Dec. 14, To certificates of indebtedness department....	15.00
Dec. 14, To Sinking Fund.....	7.50
1895.	
Feb. 20, To Broadway bridge.....	5,000.00



Feb. 20, To certificates of indebtedness department..	\$25.00	
Feb. 20, To Sinking Fund.....	41.70	
March 15, To Broadway bridge.....	1,500.00	
March 15, To certificates of indebtedness department	12.51	
March 15, To Sinking Fund.....	12.51	
May 15, To Broadway bridge.....	1,500.00	
May 15, To certificates of indebtedness department..	25.00	
May 15, To Sinking Fund.....	12.51	
May 16, To Tenth ward sewer.....	2,000.00	
May 16, To certificates of indebtedness department..	16.67	
May 16, To Sinking Fund.....	16.68	
June 18, To Warren Scharff Asphalt Company.....	40,000.00	
June 18, To Tenth ward sewer.....	16,000.00	
June 18, To certificate of indebtedness department....	23.35	
June 18, To Sinking Fund.....	280.00	
July 2, To Tenth ward sewer.....	4,000.00	
July 2, To Broadway bridge.....	21,000.00	
July 2, To certificate of indebtedness department.....	65.42	
July 2, To Sinking Fund.....	125.00	
July 8, To certificate of indebtedness department.....	24.23	
July 18, To tax levy certificate of indebtedness.....	103,000.00	
July 18, To Sinking Fund.....	1,030.00	
Oct. 16, To tax levy certificate of indebtedness.....	2,000.00	
Oct. 16, To certificate of indebtedness department.....	25.00	
Oct. 16, To Sinking Fund.....	8.32	\$198,766.40
To balance on hand Dec. 1st, 1895.....		140,910.67
Total.....		\$339,677.07



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FIFTEENTH ANNUAL REPORT

OF THE

BOARD

OF

WATER COMMISSIONERS

OF THE

CITY OF SAINT PAUL.

JANUARY 1, 1897.

ST. PAUL HINN.  
THE PIONEER PRESS COMPANY  
1897.



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FIFTEENTH ANNUAL REPORT  
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CITY OF SAINT PAUL.

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JANUARY 1, 1897.

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ST. PAUL, MINN.:  
THE PIONEER PRESS COMPANY.  
1897.

**OFFICERS**  
**OF THE**  
**CITY WATER WORKS.**  
**JANUARY 1, 1897.**

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**BOARD OF WATER COMMISSIONERS.**

**R. B. C. BEMENT, President. Term expires Jan. 1, 1901.**  
**JOHN H. WOLTERSTORFF. Term expires Jan. 1, 1901.**  
**J. F. HOYT. Term expires Jan. 1, 1900.**  
**H. E. STEVENS. Term expires Jan. 1, 1898.**  
**THOS. GRACE. Term expires Jan. 1, 1899.**

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**JOHN CAULFIELD, Secretary.**  
**A. R. STARKEY, Superintendent.**  
**L. W. RUNDLETT, City Engineer and Engineer of the Board.**  
**MARTIN FEIST, Chief Engineer and Engineer of McCarron Lake Station.**  
**M. THOMMES, Assistant Engineer of McCarron Lake Station.**  
**H. GEISLER, Gate Keeper and Engineer of Vadnais Lake Station.**  
**A. A. THOMPSON, Assistant Engineer of Vadnais Lake Station.**  
**JACOB ABRESCH, Engineer of Centerville Station.**  
**JOS. DOERR, Engineer of West St. Paul Station.**  
**F. J. KENNY, Assistant Engineer of West St. Paul Station.**  
**GEO. DOORLEY, Meter Inspector.**

FIFTEENTH ANNUAL REPORT  
OF THE  
BOARD OF WATER COMMISSIONERS  
OF THE  
CITY OF ST. PAUL.

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OFFICE OF THE BOARD OF WATER COMMISSIONERS,

ST. PAUL, MINN., Jan. 1, 1897.

*To the Honorable the Mayor and Common Council of the City of St. Paul,*

GENTLEMEN: The Board of Water Commissioners of the City of St. Paul herewith presents its fifteenth annual report.

The incidents of the year briefly are as follows:

For the first time water was let into the new concrete conduit, constructed in 1895, but not used or accepted up to Jan. 1, 1896, connecting Otter lake with the open conduit leading to Pleasant lake. The gates at Otter lake were opened in July, and water let in for the purpose of testing the conduit as to its capacity and condition for acceptance. It was found to be tight and in good condition.

It was originally estimated that 15,000,000 gallons could be put through this conduit in twenty-four hours, but by actual measurement it was found to deliver over 18,000,000 gallons of water in twenty-four hours. In making the test it was ascertained that ten inches in the level of the water of Otter lake furnished 108,000,000 gallons of water by weir measurement. After these figures were determined the Otter lake supply was shut off and held as reserve supply.

After several years' experience it was found that the water pumped from Baldwin lake, the smallest and most shallow of the chain of lakes known as the Rice lakes, and the last one of them, in dry and seasons of low water, carried more or less vegetable matter in it, and to obviate this difficulty and to provide an additional supply of water, a wooden conduit of forty-two inches inside diameter was constructed from the weir chamber on the Otter lake conduit above referred to, to Centerville lake, which is a much deeper lake, and not only free from the vegetable growth which is found in Baldwin lake, but is situated at the head of the chains of lakes, and a much better quality of water, as is shown by analysis.

On the shores of Centerville lake there were sunk a series of twenty-eight artesian wells to increase the supply of water as well as the quality. These wells are all connected together by castiron pipes of proper capacity and connected directly with a new high-duty pumping engine, built by the E. P. Allis Company, of 15,000,000 gallons capacity in each twenty-four hours. The pumping engine was also connected to an intake pipe extending upwards of a thousand feet out into deep water in Centerville lake.

Two boilers were set up to furnish steam to this plant, one brought from Baldwin lake and the other from McCarron lake, and the plant is now set up and ready for service.

The Baldwin lake plant is now shut down, and the new supply to be used, the old one being kept as a reserve supply.

This new supply is estimated to furnish 15,000,000 gallons of water daily, when required; 10,000,000 from the wells, and the balance from the lake.

We have practically increased the supply of water when required over 10,000,000 gallons daily, and in our opinion, no extensions for additional supply will be required for many years to come.

A new force main of thirty-six inches inside diameter castiron pipe was laid from the McCarron lake pumping station to the reservoir.

Owing to delays in receiving the castiron specials this work was carried over late into December, and it was deemed unwise and unnecessary to open the embankment of the reservoir, during the season of frost, to carry this pipe into the reservoir, and the work was stopped, but it will be finished early in the spring.

We now have two mains across the Rice street swamp, and any interruption of our high service supply is thus doubly protected.

From frequent analyses we find that the quality and condition of the water supplied this year has been improved over last year, and many less complaints have been received. We attribute this to the much larger infusion of artesian well water from Vadnais lake wells, and the higher stage of water in the lakes.

Your attention is called to the necessity for increased pumping facilities at our principal pumping station, McCarron lake. We now have three pumping engines there, as follows:

No. 1, 2,000,000 gallons daily capacity.

No. 2, 4,000,000 gallons daily capacity.

No. 3, 6,000,000 gallons daily capacity.

There are many days in the months of July and August when over 10,000,000 gallons are pumped, which is at the maximum capacity of the two largest pumps. Should anything happen to either of these large pumps, incapacitating them for duty, there would be a shortage of water over the actual requirements.

It is therefore recommended that No. 1 pump be sold, it being the least economical and the oldest and most obsolete type of engine, and a new pump of 10,000,000 gallons daily capacity substituted, which will then give us a pumping capacity of:



One pump, 4,000,000 gallons daily capacity.

One pump, 6,000,000 gallons daily capacity.

One pump, 10,000,000 gallons daily capacity.

Which will cover all possible requirements for many years to come.

The city engineer has prepared plans and specifications for this proposed new engine, and when ordered bids can be taken. It will take at least nine months before an engine of this capacity can be built and set up, ready for use.

The city comptroller has acknowledged the correctness of the claim, that our sinking fund should be credited with the interest earned on the uninvested balances detailed in our last report, and has credited our sinking fund with \$1,203.08 on this account.

Last year we called your attention to the error in the report of the city comptroller of the total cost of the water works to the city, which as yet has not been corrected, and the total cost as shown in his report for 1896 is \$5,129,770. The books of this department make the total cost only \$3,758,857, made up as follows:

Original purchase .....	\$510,000.00
Extensions (city work).....	1,961,626.00
Construction (outside of city, additional supply, etc.)	1,237,267.00
Meters .....	49,964.00

Total (as may be seen in our trial balance).....	\$3,758,857.00
--	----------------

To the above actual cost the city comptroller has added the following:

Total that has been paid for general maintenance...	\$392,266.00
Total that has been paid for repairs.....	53,752.00
Total that has been paid for interest.....	1,290,542.00

Total .....	\$1,736,510.00
Less sinking fund.....	375,647.00

Total added by comptroller to our cost.....	\$1,360,913.00
---	----------------

It is manifestly absurd to add these three last items as a cost of the works to the city, for it all has been paid for out of the earnings of the department, and is more in the nature of a fixed charge.

Maintenance and repairs are manifestly an expense, just as much as fuel or salaries, which is included in those items in our books.

Suppose a railroad company should add maintenance and interest each year as a cost of their roadbed, the cost per mile would soon be utterly absurd.

If these additions are made in the comptroller's statement for the sake of making a larger showing of assets belong to the city, the figure should have been reached in another way, and the present worth or

value of the water works determined by capitalizing them at a figure which, at say four per cent, the net earnings of the department would pay interest upon.

We only call attention to this point because we have been frequently asked to explain the discrepancy between our figures of cost and that shown in the comptroller's report.

(Signed)

R. B. C. BEMENT,  
THOS. GRACE,  
J. F. HOYT,  
JOHN H. WOLTERSTORFF,  
H. E. STEVENS.

# SECRETARY'S REPORT.

OFFICE OF THE BOARD OF WATER COMMISSIONERS,  
ST. PAUL, MINN., JAN. 1, 1897.

To the Board of Water Commissioners,

GENTLEMEN: I herewith submit my fifteenth annual report, with accompanying statements and tables, showing in detail under appropriate heads the financial operations of the Water Department for thirteen months ending Dec. 31, 1896; also, comparative statements of receipts and disbursements from Aug. 10, 1882 (the time of the purchase of the works by the city) to date.

This report covers a period of thirteen months. Our previous reports closed with a year ending December 1st, and to conform with the fiscal year of the other departments of the city, the board by resolution ordered this year's report and all succeeding reports to be dated January 1st.

## REVENUE. (See Table No. 2.)

Balance on hand last report, Dec. 1, 1895, in city treasury....	\$48,670.11
General water receipts.....	\$190,714.78
Miscellaneous water receipts.....	19,546.26
Connections (street service).....	11,874.72
Extensions.....	1,283.51
Frontage tax.....	123,172.48
Shutting off and turning on water.....	31.00
Construction.....	175.50
Sinking fund earnings.....	14,989.86
Sinking fund.....	4,061.60
Meter.....	58.60
	<hr/>
Total.....	365,908.31
	<hr/>
Total.....	\$414,578.42

## DISBURSEMENTS. (See Table No. 2.)

General maintenance.....	\$41,800.24
Connections (street services).....	13,004.79
Repairs.....	2,640.34
Meters.....	8,738.23
Extensions.....	64,925.03
Construction.....	116,564.23
Interest.....	122,627.50
Refunded frontage tax.....	168.43
Sinking fund.....	31,365.75
Sinking fund earnings.....	2,685.71
Total.....	<hr/>
	404,520.25
	<hr/>
Balance.....	\$10,058.17



The general water receipts, including high and low service and meters for the thirteen months were one hundred and ninety thousand, seven hundred and fourteen dollars and seventy-eight cents (\$190,714.78).

For the purpose of comparing the receipts of 1895 and 1896, we will take the receipts up to Dec. 1, 1896, which amounted to one hundred and eighty-five thousand, one hundred and sixty-one dollars and seventeen cents (\$185,161.17), an increase of five thousand nine hundred and fourteen dollars and sixty-five cents (\$5,914.65) over the receipts for 1895, of which one hundred and ten dollars and seventy-four cents (\$110.74) was from the low service, five thousand, nine hundred and fourteen dollars and sixty-five cents (\$5,914.65) from meters, and a decrease of one thousand, one hundred and sixty-six dollars and sixty-one cents (\$1,166.61) from high service. The decrease of the revenue from high service semi-annual receipts is caused by the large number of meters that were placed in service during the past year.

Extension account is credited with one thousand, two hundred and eighty-three dollars and fifty-one cents (\$1,283.51), of which five hundred and ninety-four dollars and ninety cents (\$594.90) was for putting in large castron services for automatic fire extinguishers and for large consumers, five hundred and thirty-nine dollars and eighty-three cents (\$539.83) was for condemned water pipe sold (authorized by the board), and one hundred and forty-eight dollars and seventy-eight cents (\$148.78) was for labor furnished, oil barrels, etc., sold.

Construction account is credited with one hundred and seventy-five dollars and fifty cents (\$175.50), of which one hundred and fifty dollars (\$150) was from the sale of an old boiler (authorized by the board) and twenty-five dollars and fifty cents (\$25.50) was for labor.

#### INTEREST, REPAIRS, EXTENSIONS, GENERAL MAINTENANCE AND OTHER ACCOUNTS.

One hundred and twenty-two thousand, six hundred and twenty-seven dollars and fifty cents (\$122,627.50), being the interest on the bonded debt, has been paid from the earnings of the works.

#### REPAIR ACCOUNT.

Twenty-six hundred and forty dollars and thirty-four cents (\$2,640.34) was paid on this account, of which twenty-four hundred and eleven dollars and nineteen cents (\$2,411.19) was on account of fire hydrants, one hundred and forty-seven dollars and twenty-eight cents (\$147.28) on account of valves, and eighty-one dollars and eighty-seven cents (\$81.87) on account of water mains, a total decrease of nineteen hundred dollars and sixteen cents (\$1,900.16) from the year previous.

#### GENERAL MAINTENANCE ACCOUNT.

Forty-one thousand, eight hundred dollars and twenty-four cents (\$41,800.24) was paid on this account. The expense of maintaining the four pumping stations and Dale street reservoir was eighteen thousand, nine hundred and forty-one dollars and fifteen cents (\$18,941.15) (see Table



No. 15), of which eighty-three hundred and nineteen dollars and eighteen cents (\$8,319.18) was for salaries, ninety-eight hundred and ten dollars and seventeen cents (\$9,810.17) was for fuel, three hundred and fifty-nine dollars and eight cents (\$359.08) was for waste and machine oils, three hundred and ninety-two dollars and twenty-seven cents (\$392.27) was for repairs, and sixty dollars and forty-five cents (\$60.45) for kerosene oil, leaving a balance of twenty-two thousand, eight hundred and fifty-eight dollars and nine cents (\$22,858.09) for salaries and labor of all officers, employes, office expenses, fuel, and all other expenses necessary for maintaining the works. (See Table No. 19 for comparative statement of the expenses of maintaining the pumping stations and reservoir for the past six years.)

#### EXTENSION ACCOUNT.

Sixty-four thousand, nine hundred and twenty-five dollars and three cents (\$64,925.03) was paid on account of city extensions. Included in this amount was the expense of an additional thirty-six inch force main laid from the McCarron lake pumping station to the reservoir, a distance of seventy-six hundred and eighty (7,680) feet, at an expense of forty-nine thousand, three hundred and forty-seven dollars and sixty-four cents (\$49,347.64), of which thirty-six thousand, thirteen dollars and sixty-seven cents (\$36,013.67) was for castiron pipe, eighteen hundred dollars (\$1,800) for valves, forty-nine hundred and seventeen dollars and ten cents (\$4,917.10) for specials, lead, yarn, drayage, and inspection, and sixty-six hundred and sixteen dollars and eighty-seven cents (\$6,616.87) for laying the same, including piling. Six hundred and forty-eight dollars and ninety-eight cents (\$648.98) was also expended in protecting the old twenty-inch force main crossing the swamp at Rice street.

#### CONSTRUCTION ACCOUNT.

One hundred and sixteen thousand, five hundred and sixty-four dollars and twenty-three cents (\$116,564.23) was paid on this account for the Otter lake conduit and the Centerville lake conduit pumping station, artesian wells and new pump at Centerville, and the completion of the artesian well plant at Vadnais lake.

#### PAY ROLL. (See Table No. 13.)

All of the work in laying water pipes the past season was done under contracts. The putting in of service pipes, additional fire hydrants, valves, and street sprinkling hydrants was done by day labor; also, work at the various pumping stations, lakes, and canals. The pay roll of all officers and employes for the thirteen months amounted to fifty thousand, four hundred and forty dollars and thirteen cents (\$50,440.13), and the monthly average of employes has been eighty-seven.

## SINKING FUND. (See Table No. 12.)

This fund now amounts to three hundred and sixty-five thousand, five hundred and ninety dollars and seventy-one cents (\$365,590.71). Your attention is respectfully called to Table No. 12, accompanying this report, showing the sinking fund investments, date of investments, date of certificates, when due, etc.

This account increased the past year twenty-eight thousand, six hundred and eighty dollars and four cents (\$28,680.04), of which fifteen thousand dollars (\$15,000) was paid from the earnings of the works, and thirteen thousand, six hundred and eighty dollars and four cents (\$13,680.04), being the interest earnings on the invested funds.

## CONTRACTS. (See Table No. 6.)

Contracts have been let since last report amounting to one hundred and seventy-seven thousand, two hundred and forty dollars and fifty-four cents (\$177,240.54), on which one hundred and fifty-seven thousand, eight hundred and fifty-six dollars and forty cents (\$157,856.40) has been paid, leaving a balance of nineteen thousand, three hundred and eighty-four dollars and fourteen cents (\$19,384.14) to be paid when contracts are completed.

On Dec. 1, 1895, date of last annual report, there was due on contracts, not then completed, the sum of twenty thousand, five hundred and four dollars and twenty-eight cents (\$20,504.28) on which twenty thousand, ninety dollars and ninety-nine cents (\$20,090.99) has been paid, leaving a balance of four hundred and thirteen dollars and twenty-nine cents (\$413.29) still due.

## BONDED DEBT. (See Table No. 7.)

No increase has been made in the bonded debt since May 1, 1890. The present bonded debt is two million, four hundred and sixty thousand dollars (\$2,460,000), the annual interest of which is one hundred and fourteen thousand, two hundred dollars (\$114,200), and is paid from the revenue of the works.

## FRONTAGE TAX. (See Table No. 11.)

There has been collected during the year by the county treasurer one hundred and twenty-three thousand, one hundred and seventy-two dollars and forty-eight cents (\$123,172.48) on account of frontage tax. Your attention is called to Table No. 11 accompanying this report, showing in detail the collections, balances, etc., for the various years this assessment has been made.

Your attention is also called to Table No. 21, showing the number of miles of mains laid annually, since Aug. 10, 1882 (when the city purchased the works), the cost of same, expenditures for construction outside of city limits, annual maintenance, number of taps, annual receipts from the consumers and the annual increase from same, frontage tax receipts and as-



assessments, and the number of miles of mains that will be dropped annually from the frontage tax assessments under the law passed by the legislature in 1895, exempting property in front of which water mains are laid from further assessments after having paid the ten years. From this table it appears that property in front of sixty-seven miles of mains is already exempt and eighteen and one-half miles additional will be exempt next year.

METERS. (See Tables Nos. 16 and 18.)

There are now in service 1,546 meters, an increase of 437 during the year, of which the department owns 1,500 and the consumers forty-six. Five hundred and forty-nine meters were tested.

The board, to encourage the general use of meters, still adheres to the practice of making no charge to the consumer for setting meters.

SERVICES. (See Table No. 14.)

During the year 540 applications have been made for service connections, of which 384 were on high service and 156 on low service. Total number of applications to date is 14,782, of which 8,497 are on high service and 6,285 on low service. There were 2,012 applications, and all on low service when the city purchased the works in August, 1882.

PLUMBING AND INSPECTION (See Table No. 20.)

Forty-nine plumbers were granted licenses during the year, and 1,173 permits were issued to them to do work in connection with the introduction and extension of water services, as against 1,170 in 1895, 1,065 in 1894, 1,362 in 1893, 1,649 in 1892, 1,991 in 1891, 2,182 in 1890, 2,424 in 1889, 1,707 in 1888, 1,610 in 1887, 1,497 in 1886, 1,454 in 1885 and 718 in 1884. In addition to the inspection and examination of all the work done by licensed plumbers, there were 1,233 special inspections, of which 495 were on high service and 738 on low service. Nearly all these special inspections were made at the request of consumers for change of rate. We have completed a general inspection on low service of all premises where water is used and are now engaged inspecting high service. Table No. 20 shows the character and number of hose violations reported to this department during the past season and also a comparative statement for years 1894, 1895 and 1896.

Respectfully submitted,

JOHN CAULFIELD,  
Secretary.

TABLE NO. 1.

Trial Balance, Dec. 31, 1886.		
Account.	Dr.	Cr.
St. Paul water works (original purchase).....	\$510,000.00	
Bond account .....		\$2,460,000.00
General water receipts.....		2,050,691.67
Miscellaneous water receipts.....		253,031.14
Connection (services) .....		6,160.29
Extension .....	1,001,626.70	
General maintenance .....	390,206.90	
Repair .....	53,752.16	
Meter .....	40,064.55	
Construction .....	1,237,207.94	
Interest .....	1,290,542.01	
General water receipts (hydrant account).....		121,663.19
Sinking fund .....	365,590.71	
Sinking fund earnings.....		46,927.52
Shutting off and turning on water.....		2,207.00
Frontage tax .....		934,389.02
Bank of Minnesota.....	313.44	
C. L. Horst, city treasurer.....	9,744.73	
	<hr/> \$5,875,069.83	<hr/> \$5,875,069.83



TABLE NO. 2.

## RECEIPTS AND DISBURSEMENTS FROM DEC. 1, 1895, TO DEC. 31, 1896.

Balance Dec. 1, 1895.....		\$48,670.11
General water receipts, high service..	\$69,659.80	
General water receipts, low service...	50,796.70	
General water receipts, meters .....	70,258.28	
		\$190,714.78
Miscellaneous receipts, builders.....	\$1,102.12	
Miscellaneous receipts, flushing sewers	752.31	
Miscellaneous receipts, filling cisterns.	473.32	
Miscellaneous receipts, sprinkling sts...	17,218.51	
		\$19,546.26
Connections (services).....		11,874.72
Extension .....		1,283.51
Frontage tax .....		123,172.48
Shutting off and turning on water....		51.00
Construction .....		175.50
Sinking fund earnings.....		14,989.86
Sinking fund .....		4,061.60
Meter .....		58.60
		\$385,908.31
Total receipts .....		\$414,578.42

## DISBURSEMENTS.

General Maintenance—		
Salaries .....	\$19,262.68	
Stationery and printing .....	2,017.57	
Miscellaneous .....	1,371.42	
Labor .....	7,469.16	
Material and fuel.....	11,070.09	
Stable-feed .....	338.64	
Stable-repairs .....	270.68	
		\$41,800.24
Connections—		
Labor .....	\$9,243.57	
Pipe .....	2,207.08	
Brass goods and stop boxes.....	455.28	
Tools and miscellaneous .....	1,098.86	
		\$13,004.79
Repairs—		
Hydrants—labor .....	\$2,317.96	
Hydrants—material .....	93.23	
Valves—labor .....	144.68	
Valves—material .....	2.60	
Mains—labor .....	61.03	
Mains—material .....	20.84	
		\$2,640.34
Meters—		
Labor and supplies .....	\$2,644.89	
Freight and meters.....	6,093.34	
		\$8,738.23
Extensions—		
Pipe and special castings.....	\$45,641.98	
Labor .....	13,575.05	
Tools and repairs of same.....	257.71	
Advertising .....	11.56	
Fire hydrants .....	924.55	
Valves and valve boxes.....	2,002.54	
Lead and hemp packing.....	1,343.82	
Lumber and material.....	747.00	
Miscellaneous and building account...	420.82	
		\$64,925.03
Construction—New Supply—		
Pipe and special castings.....	\$11,098.65	
Labor and contracts.....	96,294.93	
Tools and repairs of same.....	189.12	
Lumber and material .....	2,926.60	
Engineering and right of way.....	5,844.35	
Miscellaneous and building account...	200.58	
		\$116,564.23
Interest .....		122,627.50
Refunded frontage tax.....		168.43
Sinking fund .....		31,365.75
Sinking fund earnings.....		2,685.71
Total disbursements .....		\$404,520.25
Balance .....		\$10,058.17

TABLE NO. 3.

## RECEIPTS AND DISBURSEMENTS FROM AUG. 10, 1882, TO DECEMBER 31, 1883.

General water receipts, high service....	\$550,527.23	
General water receipts, low service.....	878,738.15	
General water receipts, meters.....	623,428.20	
		\$2,050,691.07
Miscellaneous receipts, builders .....	\$37,467.80	
Miscellaneous receipts, water carts....	3,796.13	
Miscellaneous receipts, flushing sewers	11,571.62	
Miscellaneous receipts, filling cisterns.	20,322.09	
Miscellaneous receipts, sprinkling sts..	179,873.50	
		\$253,031.14
Connections (services) .....		292,380.47
Extension .....		31,335.73
Interest .....		67,964.84
Sinking fund .....		7,950.42
Frontage tax .....		936,940.79
Meter .....		58.60
Shutting off and turning on water....		2,207.00
Repairs .....		3,259.15
Construction .....		3,694.26
Bills payable .....		653,000.00
Bonds .....		2,110,000.00
General water receipts (hydrant acc't)		121,963.19
Sinking fund earnings.....		52,126.16
Total receipts .....		\$6,126,161.16
DISBURSEMENTS.		
General Maintenance—		
Salaries .....	\$214,855.07	
Stationery and printing.....	14,624.24	
Miscellaneous .....	8,382.15	
Labor .....	56,684.77	
Material and fuel.....	92,886.59	
Stable-feed .....	5,434.39	
Stable-repairs .....	3,309.69	
Connections—		\$396,266.90
Labor .....	\$162,928.10	
Pipe .....	76,030.48	
Brass goods and stop boxes.....	39,016.25	
Tools and miscellaneous .....	8,245.35	
Repairs—		\$286,220.18
Hydrants—labor .....	\$36,046.07	
Hydrants—material .....	1,729.75	
Valves—labor.....	1,249.39	
Valves—material .....	547.02	
Mains—labor .....	15,100.93	
Mains—material .....	2,249.05	
Meters—		\$57,011.31
Labor and supplies .....	\$16,304.25	
Freight and meters .....	33,718.90	
Extensions—		\$50,023.15
Pipe and special castings.....	\$1,060,700.01	
Labor .....	622,024.84	
Tools and repairs of same.....	19,846.28	
Advertising .....	334.04	
Fire hydrants .....	97,489.23	
Valves and valve boxes.....	77,729.53	
Lead and hemp packing.....	67,054.79	
Lumber and material.....	22,760.58	
Miscellaneous and building account...	25,004.22	
Construction (New Supply)—		\$1,992,062.52
Pipe and special castings.....	\$187,006.71	
Labor and contracts.....	656,306.91	
Tools and repairs of same.....	5,374.74	
Lumber and material.....	90,477.60	
Freight .....	9,479.22	
Engineering and right of way.....	125,811.55	
Miscellaneous and building account...	18,900.70	
Reservoirs .....	147,484.77	
		\$1,240,062.20
Interest .....		1,358,507.45
Refunded frontage tax.....		2,551.77
Bills payable .....		653,000.00
Bond .....		160,000.00
Sinking fund .....		372,165.24
Sinking fund earnings .....		6,574.53
Total disbursements .....		\$6,126,161.16
Balance .....		







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TABLE NO. 4.

STATEMENT SHOWING AMOUNT PAID THE CITY TREASURER AND  
WARRANTS DRAWN AGAINST SAME FROM DEC. 1, 1895, TO DEC. 31,  
1896.

1895.		
Dec. 1....	Balance in treasury as per last report.....	\$48,670.11
Dec. 6....	Cash.....	\$1,000.00
Dec. 9....	Cash.....	1,000.00
Dec. 10....	Cash.....	1,000.00
Dec. 11....	Cash.....	1,000.00
Dec. 13....	Cash.....	1,000.00
Dec. 18....	Cash.....	1,000.00
Dec. 19....	Cash.....	1,500.00
Dec. 24....	Cash.....	1,000.00
Dec. 27....	Cash.....	1,000.00
		\$9,500.00
1896.		
Jan. 6....	Cash.....	\$10,000.00
Jan. 9....	Cash.....	5,000.00
Jan. 13....	Cash.....	5,000.00
Jan. 16....	Cash.....	1,000.00
Jan. 18....	Cash.....	1,000.00
Jan. 22....	Cash.....	2,000.00
Jan. 28....	Cash.....	1,000.00
Jan. 31....	Cash.....	1,000.00
		26,000.00
Feb. 5....	Cash.....	\$5,000.00
Feb. 8....	Cash.....	1,000.00
Feb. 11....	Cash.....	2,000.00
Feb. 15....	Cash.....	1,000.00
Feb. 18....	Cash.....	1,000.00
Feb. 20....	Cash.....	1,000.00
Feb. 21....	Cash.....	1,000.00
Feb. 24....	Cash.....	2,000.00
Feb. 27....	Cash.....	2,000.00
Feb. 28....	Cash.....	1,500.00
Feb. 29....	Cash.....	2,500.00
		20,000.00
March 6..	Cash.....	\$10,000.00
March 9..	Cash.....	10,000.00
March 11..	Cash.....	2,000.00
March 12..	Cash.....	2,000.00
March 16..	Cash.....	2,000.00
March 17..	From county treasurer on account of frontage tax...	14,435.28
March 20..	Cash.....	1,000.00
March 21..	Cash.....	2,000.00
March 25..	Cash.....	1,000.00
March 27..	Cash.....	1,000.00
March 31..	Cash.....	1,000.00
		46,435.28
April 2...	Cash.....	\$1,000.00
April 4...	Cash.....	1,000.00
April 7...	Cash.....	1,000.00
April 9...	Cash.....	1,000.00
April 13...	Cash.....	1,000.00
April 20...	Cash.....	1,000.00
April 22...	Cash.....	1,000.00
April 25...	Cash.....	1,000.00
April 30...	Cash.....	2,000.00
		10,000.00
May 7....	Cash.....	\$1,000.00
May 8....	Cash.....	1,000.00
May 12....	Cash.....	1,000.00
May 16....	Cash.....	1,000.00
May 20....	Cash.....	1,000.00
May 23....	Cash.....	1,000.00
		6,000.00
June 3....	Cash.....	\$1,000.00
June 8....	Cash.....	1,000.00
June 9....	Cash.....	1,000.00
June 12....	Cash.....	1,000.00
June 15....	Cash.....	1,000.00
June 18....	Cash.....	1,000.00
June 20....	Cash.....	1,000.00
June 23....	Cash.....	500.00

## ACCOUNT WITH CITY TREASURER—Concluded.

1895.		
June 25....	Cash.....	1,000.00
June 29....	Cash.....	1,000.00
June 30....	Cash.....	1,500.00
		<hr/>
		11,000.00
July 8....	Cash.....	\$10,000.00
July 10....	Cash.....	5,000.00
July 13....	Cash.....	5,000.00
July 15....	Cash.....	5,000.00
July 18....	Cash.....	2,000.00
July 20....	Cash.....	2,000.00
July 22....	Cash.....	1,000.00
July 24....	Cash.....	1,000.00
July 29....	Cash.....	1,000.00
July 30....	Cash.....	25.48
July 30....	Cash.....	500.00
		<hr/>
		32,525.48
Aug. 1....	Cash from county treasurer on account of frontage tax	\$103,947.13
Aug. 6....	Cash.....	1,000.00
Aug. 7....	Cash.....	1,000.00
Aug. 8....	Cash.....	1,000.00
Aug. 10....	Cash.....	1,000.00
Aug. 12....	Cash.....	1,000.00
Aug. 15....	Cash.....	1,000.00
Aug. 18....	Cash.....	1,000.00
Aug. 21....	Cash.....	1,000.00
Aug. 22....	Cash.....	3,000.00
Aug. 26....	Cash.....	1,000.00
Aug. 27....	Cash.....	1,000.00
Aug. 28....	Cash.....	1,000.00
Aug. 29....	Cash.....	1,000.00
Aug. 31....	Cash.....	2,500.00
		<hr/>
		121,447.13
Sept. 5....	Cash.....	\$20,000.00
Sept. 10....	Cash.....	2,000.00
Sept. 12....	Cash.....	2,000.00
Sept. 14....	Cash.....	2,000.00
Sept. 16....	Cash.....	2,000.00
Sept. 17....	Cash.....	1,000.00
Sept. 19....	Cash.....	1,000.00
Sept. 22....	Cash.....	1,000.00
Sept. 24....	Cash.....	1,000.00
Sept. 25....	Cash.....	2,000.00
Sept. 29....	Cash.....	1,000.00
Sept. 30....	Cash.....	500.00
		<hr/>
		35,500.00
Oct. 6....	Cash.....	\$1,000.00
Oct. 9....	Cash.....	1,000.00
Oct. 13....	Cash.....	1,000.00
Oct. 16....	Cash.....	1,000.00
Oct. 17....	Cash.....	1,000.00
Oct. 19....	Cash.....	1,000.00
Oct. 24....	Cash.....	1,000.00
Oct. 28....	Cash.....	1,000.00
Oct. 29....	Cash.....	600.00
Oct. 31....	Cash.....	1,000.00
		<hr/>
		9,600.00
Nov. 6....	Cash.....	\$1,000.00
Nov. 7....	Cash.....	1,000.00
Nov. 10....	Cash.....	1,000.00
Nov. 18....	Cash.....	1,000.00
Nov. 20....	Cash.....	1,000.00
Nov. 21....	From county treasurer, ac- count frontage tax.....	4,790.07
Nov. 27....	Cash.....	1,000.00
		<hr/>
		10,790.07
Dec. 7....	Cash.....	\$1,000.00
Dec. 8....	Cash.....	1,000.00
Dec. 11....	Cash.....	1,000.00
Dec. 14....	Cash.....	1,000.00
Dec. 15....	Cash.....	1,000.00
Dec. 16....	Cash.....	1,000.00
Dec. 24....	Cash.....	1,000.00
Dec. 28....	Cash.....	745.45
		<hr/>
		7,745.45
		<hr/>
		346,543.41
Total .....		<hr/>
		\$895,213.52



TABLE NO. 5.

WARRANTS DRAWN ON CITY TREASURER FROM DEC. 1, 1895, TO DEC.  
31, 1896, INCLUSIVE.

1895.				
Dec. 2.	Warrants Nos. 7653 to 7654 inclu.	\$11,114.58		
Dec. 6.	Warrants Nos. 7655 to 7699 inclu.	4,211.15	\$15,355.73	
1896.				
Jan. 2.	Warrants Nos. 7700 to 7708 inclu.	\$13,714.39		
Jan. 14.	Warrants Nos. 7739 to 7754 inclu.	4,907.77	18,622.16	
Feb. 1.	Warrant No. 7755.....	\$2,901.39		
Feb. 7.	Warrants Nos. 7756 to 7820 inclu.	14,560.51		
Feb. 19.	Warrants Nos. 7821 to 7829 inclu.	517.82	17,979.63	
Mar. 2.	Warrant No. 7830.....	\$2,632.43		
Mar. 12.	Warrants Nos. 7831 to 7890 inclu.	28,396.08	51,028.51	
April 1.	Warrants Nos. 7891 to 7894 inclu.	\$3,574.10		
April 8.	Warrants Nos. 7895 to 7939 inclu.	10,470.96	14,045.06	
May 1.	Warrants Nos. 7940 to 7956 inclu.	\$10,630.15		
May 6.	Warrant No. 7957.....	180.00		
May 9.	Warrants Nos. 7958 to 7992 inclu.	2,479.61		
May 12.	Warrant No. 7993.....	65.00		
May 18.	Warrants Nos. 7994 to 8000 inclu.	94.95		
May 19.	Warrants Nos. 8001 to 8002 inclu.	1,650.00		
May 23.	Warrants Nos. 8003 to 8005 inclu.	75.00	15,174.71	
June 1.	Warrant No. 8006.....	\$4,316.17		
June 3.	Warrants Nos. 8007 to 8047 inclu.	9,962.83		
June 23.	Warrants Nos. 8048 to 8059 inclu.	4,885.37	19,164.37	
July 1.	Warrants Nos. 8051 to 8071 inclu.	\$32,219.45		
July 8.	Warrants Nos. 8072 to 8101 inclu.	16,908.53		
July 16.	Warrants Nos. 8102 to 8116 inclu.	5,647.11	54,775.09	
Aug. 1.	Warrant No. 8117.....	\$4,349.36		
Aug. 11.	Warrants Nos. 8118 to 8185 inclu.	37,115.53	41,464.89	
Sept. 1.	Warrant No. 8186.....	\$4,869.61		
Sept. 10.	Warrants Nos. 8187 to 8245 inclu.	45,540.96	50,410.57	
Oct. 1.	Warrants Nos. 8246 to 8263 inclu.	\$17,143.38		
Oct. 10.	Warrants Nos. 8264 to 8315 inclu.	15,301.48		
Oct. 13.	Warrant No. 8316.....	15,000.00		
Oct. 26.	Warrants Nos. 8317 to 8336 inclu.	2,474.88	49,925.74	
Nov. 2.	Warrant No. 8337.....	\$4,732.21		
Nov. 7.	Warrants Nos. 8338 to 8392 inclu.	20,317.48		
Nov. 24.	Warrants Nos. 8393 to 8417 inclu.	4,525.57	38,575.26	
Dec. 1.	Warrant No. 8418.....	\$4,078.14		
Dec. 8.	Warrants Nos. 8419 to 8463 inclu.	4,977.26		
Dec. 21.	Warrants Nos. 8464 to 8479 inclu.	9,891.67	18,947.07	
Grand total.....				\$385,468.79
Balance .....				\$9,744.73

TABLE NO. 6.

CONTRACTS MADE BY THE BOARD OF WATER COMMISSIONERS FROM  
DEC. 1, 1895, TO DEC. 31, 1896.

No.	Date of Contract.	With Whom and for What Purpose.	Amount of Contract.	Amount Paid.	Amount Due.
1895.					
1	Dec. 7.	J. W. Cunningham & Co., print- ing annual report for 1895.....	\$641.25	\$641.25	
2	Jan. 15.	P. H. Kelly Merc. Co., lubricating oils .....	231.35	231.35	
3	Jan. 21.	National Meter Co., New York, water meters .....	5,384.55	5,384.55	
4	Mar. 2.	Sherwood, Sutherland & Co., driv- ing piles.....	168.20	168.20	
5	April 15.	South Park Foundry & Machine Co., water gates.....	3,014.80	3,014.80	
6	April 15.	South Park Foundry & Machine Co., fire hydrants.....	924.55	924.55	
7	April 15.	Union Brass & Metal Manufac- turing Co., brass goods.....	375.25	375.25	
8	April 29.	E. P. Allis & Co., Milwaukee, pumping engine, Centerville....	20,700.00	10,350.00	\$10,350.00
9	April 30.	The Western Supply Co., lead pipe and block tin.....	1,438.43	1,438.43	
10	April 30.	Jas. Sheely, drayage.....	1,116.86	1,116.86	
11	April 30.	Nic Feyen, laying pipe and con- necting wells at Centerville....	2,996.76	2,996.76	
12	May 1.	St. Paul Plow Co., special cast- ings for city extensions.....	1,132.72	1,132.72	
13	May 1.	J. F. McCarthy, St. Paul, wells at Centerville.....	16,639.43	16,639.43	
14	May 2.	The Ohio Pipe Co., Columbus, O., 6-12 and 16 in. cast iron pipe for city .....	6,000.23	6,000.23	
15	May 2.	Dennis Long & Co., Louisville, Ky., 24 & 36 in. castiron pipe for Centerville.....	5,607.79	5,607.79	
16	May 2.	M. J. Drummond, Lynchburg, Va., 6 in. to 20 in. castiron pipe for Centerville.....	1,960.61	1,960.61	
17	May 9.	St. Paul Foundry Co., castiron specials .....	5,635.74	5,635.74	
18	May 13.	Dennis Long & Co., Louisville, Ky., 36 in. castiron pipe, city..	36,013.37	36,013.67	
19	May 15.	Bingham & Taylor, Buffalo, N. Y., valve and stopcock boxes...	1,088.74	1,088.74	
20	May 15.	T. Brennan Lumber Co., lumber for Otter L. Conduit.....	1,659.56	1,659.56	
21	May 19.	Jose T. Million, laying water mains on Duke street.....	1,142.20	1,027.98	114.22
22	May 20.	Nic Feyen, drayage to Centerville mains in city.....	620.53	620.53	
23	May 20.	Patrick Doherty, laying water mains in city.....	3,440.53	3,108.50	331.94
24	May 20.	Hennessey & Cox, wooden con- duit to Centerville.....	30,758.30	29,258.30	1,500.00
25	July 8.	Hennessey & Cox, pump house at Centerville .....	9,486.00	9,436.00	50.00
26	July 8.	John Kenny, boiler, McCarron Lake station.....	1,162.50	986.00	176.50
27	July 25.	Fairbank, Morse & Co., laying 36 in. water pipe.....	7,251.02	6,563.99	687.03
28	July 25.	N. W. Shot & Lead Works, 25 tons pig lead.....	1,413.15	1,413.15	
29	Sept. 28.	N. Feyen, removing two boilers to Centerville station.....	74.00	74.00	
30	Sept. 28.	S. Swanson, two artesian wells at Vadnais Lake.....	1,040.00		1,040.00
31	Oct. 10.	John Kenny, smoke stack, Cen- terville station.....	270.00		270.00
32	Oct. 10.	The Western Supply Co., 5 tons lead pipe.....	329.42	329.42	
33	Oct. 14.	Nic Feyen, grading on Centerville conduit .....	1,145.00	1,095.00	50.00
34	Oct. 29.	N. W. Fuel Co., coal and wood..	5,992.40	1,375.92	4,616.48
35	Oct. 29.	Pioneer Fuel Co., coal for Vadnais station .....	385.00	187.03	197.97
			\$177,240.54	\$157,856.40	\$19,384.14

TABLE NO. 6--Continued.

CONTRACTS MADE PREVIOUS TO DEC. 1, 1895, AND FOR WHICH FINAL SETTLEMENT WAS NOT MADE AT TIME OF LAST REPORT.

Date of Contract.	With Whom and for What Purpose.	Amount Due Dec. 1, 1895.	Amount Paid.	Amount Due.
1892.				
July 25.	Andrew Toomey, St. Paul, engine house, West St. Paul.....	\$50.00	\$50.00	
1895.				
April 29.	Patrick Doherty, St. Paul, laying water mains in Div. No. 1.....	425.82	425.82	
April 29.	Million & Young, St. Paul, laying water mains in Divs. No. 2 and 3....	979.61	979.61	
June 17.	E. P. Allis Co., Milwaukee, Wis., pumping engine at Vadnais Lake....	3,750.00	3,750.00	
June 19.	J. F. McCarthy, St. Paul, artesian well at Centerville .....	1,400.00	1,400.00	
July 17.	Ransom Subway Co., Chicago, conduit to Otter Lake.....	5,025.79	4,612.50	\$413.29
Aug. 10.	Chas. Stone, St. Paul, pump, well, etc., at Vadnais Lake.....	1,687.10	1,687.10	
Sept. 24.	Pioneer Fuel Co., St. Paul, fuel.....	6,650.56	6,650.56	
Oct. 28.	John Martin Lumber Co., lumber....	77.46	77.46	
Nov. 13.	St. Paul Building Co., St. Paul, addition to pump house, Vadnais Lake..	457.94	457.94	
		\$20,504.28	\$20,090.99	\$413.29

TABLE NO. 7.

## BOND ACCOUNT JANUARY 1, 1897

Date of Legislative Acts Authorizing Issue of Bonds.	Amount of Bonds Au- thorized.	Date of Bonds Issued.	When Due.	Amount of Bonds Issued.	Rate.	INTEREST PAYABLE.											Total Annual Interest.	
						Dec. 1.	Jan. 2.	Feb. 1.	Mar. 2	April 1	May 2.	June 1.	July 2.	Aug. 1.	Sept 1.	Oct. 1.		Nov. 2.
Feb. 10, 1881	\$500,000	June 1, 1882	30 years	\$350,000	4 per cent	\$7,000						\$7,000						\$14,000
Jan. 26, 1883	500,000	Aug. 1, 1883	30 years	150,000	5 per cent			\$3,750						\$3,750				7,500
Feb. 21, 1885	800,000	April 1, 1884	25 & 30 years	600,000	5 per cent					\$15,000						\$15,000		30,000
Jan. 31, 1887	200,000	April 1, 1885	30 years	400,000	5 per cent					10,000						10,000		20,000
Jan. 31, 1887	100,000	May 2, 1887	30 years	200,000	4½ per cent						\$4,500						\$4,500	9,000
Mar. 20, 1889	300,000	Mar. 1, 1888	30 years	300,000	4½ per cent				\$0,750						\$0,750			13,500
		Jan. 1, 1880	30 years	100,000	4½ per cent	\$2,250							\$2,250					4,500
		Jan. 2, 1880	30 years	100,000	4½ per cent		3,000						3,000					7,200
		May 1, 1880	30 years	100,000	4½ per cent						2,250						2,250	4,500
		May 1, 1880	30 years	100,000	4 per cent						2,000						2,000	4,000
	2,560,000			\$2,460,000		\$7,000	\$5,850	\$3,750	\$0,750	\$25,000	\$8,750	\$7,000	\$5,850	\$3,750	\$0,750	\$25,000	\$8,750	\$114,200



TABLE NO. 8.

STATEMENT SHOWING AMOUNT DUE THE BOARD OF WATER COMMISSIONERS ON DEC. 31, 1896, FROM CITY OF ST. PAUL.

Water for fire purposes from Dec. 1, 1891, to June 1, 1892.....	\$28,401.53	
Water for fire purposes from June 1, 1892, to Dec. 1, 1892.....	29,229.79	
Water for fire purposes from Dec. 1, 1892, to June 1, 1893.....	30,546.89	
Water for fire purposes from June 1, 1893, to Dec. 1, 1893.....	31,007.77	
Water for fire purposes from Dec. 1, 1893, to June 1, 1894.....	31,773.12	
Water for fire purposes from June 1, 1894, to Dec. 1, 1894.....	32,307.00	
Water for fire purposes from Dec. 1, 1894, to June 1, 1895.....	32,700.16	
Water for fire purposes from June 1, 1895, to Dec. 1, 1895.....	33,204.95	
Water for fire purposes from Dec. 1, 1895, to June 1, 1896.....	33,341.84	
Water for fire purposes from June 1, 1896, to Dec. 1, 1896.....	33,509.57	
		\$316,062.62
Premiums received and retained by city on the \$160,000 of bonds issued in January, 1889, to redeem the bonds of the old St. Paul Water Co. of like amount assumed by the city at the time of purchase of the works.....		5,393.77
Relaying of water mains caused by change of grade—		
On Mt. Airy between Valley and Warren .....	\$248.12	
On Fairview between Jackson and Mt. Airy .....	134.25	
On East Sixth between Maria and Hoffman .....	309.75	
On East Sixth between Broadway and Olive .....	674.37	
On Flandrau at Harvester.....	65.00	
Changing main at Como bridge.....	760.58	
		2,282.07
Amount due for hydrant stream.....	\$27.50	
Balance .....		1894 \$340.00
For water for park fountains all .....		1895 815.00
For water for park fountains all .....		1896 855.00
For water for drinking fountains all .....		1896 312.50
	2,322.50	
		2,350.00
Repairing water mains broken by sewer contractors. (Claims filed with city comptroller).....		\$326,648.46
Balance frontage tax assessment for 1884-5-6-7-8-9 .....		114.14
Balance frontage tax assessment for 1890 .....	\$1,446.28	
Balance frontage tax assessment for 1891 .....	2,196.01	
Balance frontage tax assessment for 1892 .....	1,723.68	
Balance frontage tax assessment for 1893 .....	1,283.35	
Balance frontage tax assessment for 1894 .....	816.19	
Balance frontage tax assessment for 1895 .....	8,301.72	
Balance frontage tax assessment for 1896 .....	31,372.51	
	114,925.17	
From builders.....		\$162,164.91
From service connections.....		150.00
Street sprinkling, 1896.....		400.00
Ramsey county.....		15,375.13
		237.00
		178,827.04
Total .....		\$505,089.64

TABLE NO. 11.  
FRONTAGE TAX ACCOUNT COLLECTIONS—BALANCE DUE JAN. 1, 1897.

RECEIPTS FOR YEARS.	1889 and Previous	1890.	1891.	1892.	1893.	1894.	1895.	1896.	Total.
March 17, 1896.....	\$9.50	\$28.98	\$100.53	\$421.72	\$515.12	\$10,081.05	\$2,368.83	.....	\$14,435.28
August 1, 1896.....	14.20	3.61	76.93	310.60	219.20	14,927.42	88,305.08	.....	103,947.13
November 1, 1896.....	.....	.....	43.66	187.32	147.51	1,173.94	3,237.84	.....	4,700.07
Total receipts.....	23.70	32.47	230.12	919.64	881.79	27,083.01	94,001.75	.....	123,172.48
Amount due Dec. 1, 1895, as per last report.....	1,400.98	2,228.48	1,953.80	2,202.90	1,607.98	35,384.73	125,374.26	.....	170,312.22
Amount of 1896 assessment collectible in 1897.....	.....	.....	.....	.....	.....	.....	.....	114,925.17	47,139.74
Amount due Jan. 1, 1897.....	\$1,448.28	\$2,190.01	\$1,723.68	\$1,283.35	\$810.19	\$8,301.72	\$31,372.51	\$114,925.17	\$162,164.91

TABLE NO. 12.

## SINKING FUND INVESTMENT IN CITY TAX LEVY CERTIFICATES.

Date of Investment.	Date of Certificates.	When Due.	Certificate Numbers.	No. of Cert.	Interest.	Amount of Certificates.
Jan. 27, 1896	Jan. 15, 1896	June 15, 1897	1 to 291 inclusive	291	4%	\$145,500.00
May 25, 1896	Jan. 15, 1896	June 15, 1897	461 to 468 inclusive	6	4%	3,000.00
May 25, 1896	Feb. 15, 1896	June 15, 1897	622 to 675 inclusive	54	4%	27,000.00
May 25, 1896	April 15, 1896	June 15, 1897	1068 to 1185 inclusive	118	4%	59,000.00
July 15, 1896	July 15, 1896	July 15, 1897	1636 to 1858 inclusive	223	5%	111,500.00
July 22, 1896	July 15, 1896	July 15, 1897	1909 to 1914 inclusive	6	5%	3,000.00
Oct. 14, 1896	June 15, 1896	July 15, 1897	1514 to 1542 inclusive	29	4%	14,500.00
						\$363,500.00
Amount uninvested..						\$2,090.71

TABLE NO. 13.

Pay roll for year includes salaries of officers, engineers, firemen, inspectors and laborers.

## SALARIES OF ENGINEERS, FIREMEN AND KEEPERS AT THE VARIOUS STATIONS.

MONTH.	Number of Men.	Total Amount of Pay Roll.	McCarron Lake Station.	Vadnais Lake Station.	Baldwin Lake Station.	West St. Paul Station.	Reservoir.	Total.
1895.								
November .....	96	\$4,114.58	\$300.00	\$94.98	\$165.00	\$110.00	\$25.00	\$694.98
December .....	74	3,538.94	300.00	50.00	165.00	110.00	25.00	650.00
1896.								
January .....	57	2,901.30	300.00	95.00	58.70	110.00	25.00	588.70
February .....	50	2,632.43	255.00	95.00	50.00	110.00	25.00	535.00
March .....	63	3,064.10	255.00	138.50	50.00	110.00	25.00	578.50
April .....	65	3,112.16	255.00	110.00	50.00	110.00	40.00	565.00
May .....	95	4,316.17	300.00	50.00	154.50	110.00	40.00	654.50
June .....	113	4,467.95	282.00	50.00	165.00	110.00	40.00	647.00
July .....	103	4,349.36	300.00	68.00	165.00	110.00	40.30	683.00
August .....	90	4,869.61	300.00	110.00	165.00	110.00	40.00	725.00
September .....	98	4,233.18	300.00	110.00	165.00	110.00	40.00	725.00
October .....	118	4,732.21	300.00	110.00	165.00	110.00	40.00	725.00
November .....	111	4,078.14	300.00	66.00	46.50	110.00	25.00	547.50
Totals .....	1,133	\$50,440.13	\$3,747.00	\$1,147.48	\$1,564.70	\$1,430.00	\$430.00	\$8,313.18

TABLE NO. 14.

THE FOLLOWING TABLE SHOWS THE NUMBER OF APPLICATIONS  
MADE FOR WATER SERVICES ANNUALLY FROM 1869 TO DATE.

YEAR.	High Service.	Low Service.	Total.
1869	.....	34	.....
1870	.....	321	.....
1871	.....	250	.....
1872	.....	164	.....
1873	.....	131	.....
1874	.....	153	.....
1875	.....	95	.....
1876	.....	85	2,426
1877	.....	65	.....
1878	.....	50	.....
1879	.....	180	.....
1880	.....	167	.....
1881	.....	164	.....
1882	.....	264	.....
1883	.....	301	.....
1884	.....	336	500
1885	644	365	1,009
1886	639	369	1,008
1887	747	325	1,072
1888	812	403	1,218
1889	1,327	491	1,818
1890	1,071	336	1,407
1891	811	264	1,075
1892	671	210	881
1893	474	151	625
1894	363	139	502
1895	390	311	701
1896	384	156	540
	8,497	6,285	14,782

TABLE NO. 15.

## PUMPING PLANTS.

EXPENSE MAINTAINING THE FOUR (4) PUMPING STATIONS AND RES-  
ERVOIR.

STATION.	Salaries.	Fuel.	Waste and Machine Oil.	Repairs.	Kero- sene Oil.	Total.
McCarron Lake station.....	\$3,747.00	\$5,963.64	\$202.40	\$305.74	.....	\$10,308.78
Baldwin Lake station.....	1,564.70	1,697.88	17.88	14.40	\$15.93	3,310.79
Vadnais Lake station.....	1,147.48	1,618.77	44.22	38.76	32.52	2,881.75
West St. Paul station.....	1,430.00	529.88	4.58	33.37	12.00	2,000.83
Reservoir .....	430.00	.....	.....	.....	.....	430.00
	\$8,319.18	\$9,810.17	\$359.08	\$392.27	\$60.45	\$18,941.15



TABLE NO. 16.  
METERS IN SERVICE JAN. 1, 1897.

KIND OF METER.	SIZE.								Total.
	½	¾	1	1½	2	3	4		
Worthington (Improved) .....	106	111	33	41	7	4	2	304	
Worthington (old style) .....	7	16	7	8	2			40	
Union (rotary) .....	87	22	13	8		1	3	134	
Union (piston) .....		1	1					2	
Nash .....	10	2						12	
Crown .....	70	18	28	33	10	1	2	162	
Crown, "A A" .....	478		9	3				490	
Empire .....	14	20	48	32	9		1	124	
Empire, "A" .....	6	3	1					10	
Empire, "A A" .....									
Gem .....						1	1	2	
Thomson .....	19	6	2					27	
Thomson, "B" .....	1	50	14	4	2	1		72	
Hersey .....	34	38	30	24	11	2		139	
Hersey disc. ....	3			1		1		5	
Frost .....		1					1	1	
Trident .....	8	2	1					11	
Westinghouse .....	3		6	1	1			11	
Totals .....	15	901	282	167	121	41	10	9	1,546

TABLE NO. 17.

Shut off and turning on water from Dec. 1, 1895, to Jan. 1, 1897.

	High Service	Low Service	Total.
Shut off for repairs.....	281	284	565
Shut off for non-payment.....	260	175	435
Shut off for vacant premises.....	530	436	966
Total .....	1,071	895	1,966
Turned on old services.....	1,059	866	1,925
Turned on new services.....	349	119	468
Turned on for builders.....	4	10	14
Total .....	1,412	995	2,407

Total services shut off and turned on for year ending:

December 1, 1884.....	1,014	December 1, 1891.....	4,743
December 1, 1885.....	2,311	December 1, 1892.....	4,470
December 1, 1886.....	2,384	December 1, 1893.....	4,477
December 1, 1887.....	2,541	December 1, 1894.....	4,932
December 1, 1888.....	2,833	December 1, 1895.....	4,696
December 1, 1889.....	3,978	December 31, 1896.....	4,373
December 1, 1890.....	3,919		

TABLE NO. 19.  
EXPENSE FOR MAINTAINING PUMPING STATIONS AND RESERVOIR FOR YEARS 1891-2-3-4-5 and 6.  
McCARRON LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891.....	\$2,540.00	\$4,702.12	\$213.86	\$230.66	\$38.50	\$8,725.14	1,106,034,800	3,030,232	2,134,000	5845	871,090
1892.....	3,575.00	5,400.89	302.38	37.82	35.75	9,352.82	1,071,130,320	2,934,603	2,036,734	5380	.....
1893.....	3,593.00	5,413.30	279.56	329.46	Electric.	9,615.32	1,298,551,200	3,557,674	2,147,888	5884	623,070
1894.....	3,706.50	5,012.85	237.99	351.12	5.20	9,313.66	1,300,813,800	3,882,110	2,345,731	6427	326,000
1895.....	3,652.00	5,034.79	243.57	290.09	5.20	9,294.65	1,536,912,600	4,210,719	2,536,020	6948	338,000
1896 (13 mos.)	3,747.00	5,963.64	292.40	305.74	.....	10,308.78	1,651,624,200	4,160,011	2,751,698	6915	*50,708

\*Decrease.

## BALDWIN LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891.....	\$1,507.10	\$4,908.44	\$51.98	\$77.39	\$22.14	\$6,657.11	1,983,034,500	8,077,535	Coal 180,375 Wood 797-5	.....	.....
1892.....	1,062.08	941.00	56.28	56.12	11.90	2,127.30	1,153,794,000	9,470,266	.....	.....	.....
1893.....	1,145.06	778.42	45.18	303.99	10.35	2,343.60	1,104,158,600	9,219,623	.....	.....	.....
1894.....	1,245.06	1,182.05	49.80	251.63	10.30	2,739.44	1,449,390,900	9,662,406	.....	.....	.....
1895.....	1,450.00	2,524.46	23.77	45.19	27.08	4,070.50	1,914,949,800	8,824,653	.....	.....	.....
1896 (13 mos.)	1,564.70	1,697.88	17.88	14.40	15.93	3,310.79	1,917,058,000	9,271,715	.....	.....	.....

TABLE NO. 18.—Continued.

SIZE OF METERS—Continued.

KIND OF METERS.	Size in Inches.	Property of City.			Private Property.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of All Meters.
		In Service.	At Work Shop.	Total.	In Service.	At Work Shop.	Total.			
Thomson "B"	1½	1		1				1		1
Hersey	3	2		2				2		2
Hersey	2	9	4	13				9	4	13
Hersey	1½	24		24				24		24
Hersey	1	30		30				30		30
Hersey	¾	36	2	38				36	2	38
Hersey	¾	33	1	34				33	1	34
Hersey Disc.	2	1		1				1		1
Hersey Disc.	1½	1		1				1		1
Hersey Disc.	¾	3		3				3		3
Frost	¾	1		1				1		1
Sport	¾		1	1					1	1
Trident	1	1		1				1		1
Trident	¾	2		2				2		2
Trident	¾	8		8				8		8
Westinghouse	2	1		1				1		1
Westinghouse	1½	1		1				1		1
Westinghouse	1	6		6				6		6
Westinghouse	¾	3	1	4				3	1	4
		1,448	114	1,562	45	1	46	1,493	115	1,608

TABLE NO. 19.  
EXPENSE FOR MAINTAINING PUMPING STATIONS AND RESERVOIR FOR YEARS 1891-2-3-4-5 and 6.  
McCARRON LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891.....	\$3,540.00	\$4,702.12	\$213.86	\$230.66	\$38.50	\$8,725.14	1,108,034,800	3,030,232	2,124,000	5845	871,080
1892.....	3,575.00	5,400.80	302.36	37.82	38.75	9,352.82	1,071,130,320	2,984,608	2,036,734	5580	.....
1893.....	3,593.00	5,413.30	270.56	329.46	Electric	9,615.32	1,268,551,200	3,557,674	2,147,888	5894	623,070
1894.....	3,706.50	5,012.85	237.90	351.12	5.20	9,318.86	1,300,813,800	3,882,110	2,346,731	6427	328,000
1895.....	3,652.00	5,034.70	213.57	289.04	5.20	9,204.55	1,538,912,800	4,210,719	2,538,020	6948	328,600
1896 (13 mos.).	3,747.00	5,063.04	252.40	305.74	.....	10,308.18	1,651,524,200	4,160,011	2,751,668	6915	*50,708

\*Decrease.

## BALDWIN LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891.....	\$1,507.16	\$4,008.44	\$51.86	\$77.39	\$22.14	\$8,657.11	1,983,034,500	8,077,535	{ Coal 180,875 } { Wood 787 1/2 }	.....	.....
1892.....	1,062.08	941.00	58.28	58.12	11.90	2,127.38	1,183,794,000	9,470,268	.. 376	.....	.....
1893.....	1,145.68	778.42	46.18	363.66	10.35	2,343.60	1,104,158,600	9,210,623	.. 491 1/2	.....	.....
1894.....	1,245.68	1,182.06	46.80	251.63	10.30	2,736.44	1,440,890,800	9,662,408	.. 666 1/2	4 1/2	.....
1895.....	1,450.00	2,532.46	25.70	45.19	27.08	4,070.50	1,914,848,800	8,624,653	.. 821	4	.....
1896 (13 mos.).	1,504.70	1,067.88	17.88	14.40	15.63	3,810.70	1,917,068,000	9,271,715	.. 841 1/2	4 1/2	.....



PUMPING STATIONS AND RESERVOIR—Continued.  
VADNAIS LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.	
							Annually.	Daily.	Annually.	Daily.
1891.....	\$1,100.00	\$1,081.68	\$50.75	\$197.12	\$0.36	\$2,435.91	297,750.000	.....	246,800	.....
1892.....	1,020.00	1,905.25	73.71	102.19	25.90	3,127.05	.....	.....	.....	.....
1893.....	600.00	.....	.....	21.35	.....	621.35	.....	.....	.....	.....
1894.....	612.50	1,568.09	31.06	216.75	20.00	2,670.30	337,100.000	.....	624,387	.....
1895.....	818.33	1,105.60	47.50	31.58	11.64	2,044.05	237,043.000	.....	550,000	.....
1896 (13 mos.)..	1,147.48	1,618.77	44.22	38.76	32.52	2,881.75	938,611.850	2,364,262	612,614	.....

WEST ST. PAUL STATION.

1893.....	\$1,237.75	\$580.63	\$29.72	\$23.50	\$15.10	\$1,895.70	10,015,722	27,440	209,043	571
1894.....	1,520.00	328.96	2.88	28.83	14.20	1,694.87	9,123,480	24,960	169,225	403
1895.....	1,320.00	290.50	2.27	26.47	0.08	1,660.32	10,520,040	28,848	174,600	479
1896 (13 mos.)..	1,430.00	520.88	4.58	33.37	12.00	2,000.83	13,497,120	33,968	212,200	535

RESERVOIR.

Year.	Salaries.		Year.		Salaries.	
1891.....	.....	\$405.00	1894.....	.....	.....	\$405.00
1892.....	.....	405.00	1895.....	.....	.....	405.00
1893.....	.....	405.00	1896 (13 months) ..	.....	.....	430.00

TABLE NO. 20.

COMPARATIVE STATEMENT OF HOSE VIOLATIONS FOR 1894-5 AND 1896.

VIOLATION.	1894.			1895.			1896.		
	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.
Hose, 1 violation.....	200	129	329	136	87	223	155	46	201
Hose, 2 violations.....	28	16	44	5	1	6	10	3	13
Hose, 3 violations.....	13	7	20	1		1	1	1	2
Hose, 4 violations.....	2	3	5						
Hose, 5 violations.....	1	2	3						
Hose, 7 violations.....	2	1	3						
Reel, 6 to 9 p. m., 1 violation....	185	50	235	34		34	61	4	65
Reel, 6 to 9 p. m., 2 violations....	22	14	36	6		6	1		1
Reel, 6 to 9 p. m., 3 violations....	6	2	8	2		2	1		1
Reel, 6 to 9 p. m., 4 violations....	2	1	3	2		2			
Reel, 6 to 9 p. m., 7 violations....	1	1	2						
Hose all day, 1 violation.....	162	34	196	1		1	40	3	43
Hose all day, 2 violations.....	23	9	32	1		1			
Hose all day, 3 violations.....	2	4	6						
Hose all day, 4 violations.....	1	1	2						
Totals .....	648	274	922	188	88	276	269	57	326

TABLE NO. 21.

STATEMENT SHOWING THE NUMBER OF MILES OF PIPE LAID ANNUALLY TO DATE, EXPENSE OF SAME, FRONT-AGE TAX, ETC.

	Mains Laid.		Expenditure on Account of Laying mains.	Construction Outside of City.	Annual Maintenance	Number of Applications for Taps.	Annual Receipts from Consumers.	Increase.	Frontage Tax Receipts.	Number of Hydrants in Use.	Frontage Tax Assessment.	Years Frontage Tax Has Been Paid Incl. 1894	Years more to Pay on Basis of 10 Years.
	Miles.	Feet.											
From Aug. 10, 1882.	231.662					2,007				188			
From Dec. 1, '82, to Dec. 1, '82.	3.798		a \$12,390.44	\$1,596.80	\$1,674.58	2,018				198			
From Dec. 1, '82, to Dec. 1, '83.	4.807		61,003.97	100,021.19	6,854.30	203				236			
From Dec. 1, '83, to Dec. 1, '84.	161.250		157,186.90	360,686.93	11,473.84	500				315	\$12,852.76	11	
From Dec. 1, '84, to Dec. 1, '85.	23.2583		207,586.90	40,148.36	19,275.58	1,009			\$12,260.90	491	\$20,590.08	10	
From Dec. 1, '85, to Dec. 1, '86.	18.3324		138,694.54	19,637.46	17,976.68	1,008			19,538.26	673	\$3,787.68	8	1
From Dec. 1, '86, to Dec. 1, '87.	20.2207		223,443.70	32,937.47	22,806.58	1,072	\$106,635.23	\$12,975.71	32,495.91	868	\$4,388.88	8	2
From Dec. 1, '87, to Dec. 1, '88.	28.3392		288,018.19	97,738.31	23,790.81	1,518	112,730.01	12,900.80	55,066.01	1,134	\$8,909.10	6	4
From Dec. 1, '88, to Dec. 1, '89.	35.4083		257,688.58	80,690.50	26,122.60	1,518	124,930.01	15,892.71	73,079.70	1,471	\$6,706.21	5	4
From Dec. 1, '89, to Dec. 1, '90.	26.4085		211,033.64	28,926.29	36,082.75	1,077	139,561.20	20,648.48	88,987.80	1,748	\$9,680.96	4	6
From Dec. 1, '90, to Dec. 1, '91.	53.696		448,023.60	28,937.07	38,473.82	1,075	171,164.69	11,603.40	112,082.57	1,813	\$17,947.05	3	7
From Dec. 1, '91, to Dec. 1, '92.	14.928		e 118,343.20	41,327.25	35,349.32	881	177,595.21	6,430.62	107,809.11	2,067	\$35,336.46	2	8
From Dec. 1, '92, to Dec. 1, '93.	81.946		43,323.15	6,589.46	36,436.84	625	178,967.32	1,372.11	112,115.05	2,131	\$43,001.73	1	9
From Dec. 1, '93, to Dec. 1, '94.	6.646		42,287.17	6,138.62	d 39,138.72	502	179,246.52	270.20	147,171.46	2,290	\$25,374.26		10
From Dec. 1, '94, to Dec. 1, '95.	8.413		f 81,300.58	24,624.65	36,666.14	701	g 190,714.78	g 11,468.26	123,172.48	2,232	\$14,925.17		
From Dec. 1, '95, to Dec. 31, '96.	3.185		h 64,925.03	11,364.23	g 41,860.24	540							
Relaid in 1896, 1,508 feet.	245	220	\$1,993,202.00	\$1,240,749.78	\$396,240.65	14,782			\$936,940.70				
Less relaid and mains abandoned.	7	3,212			\$2,531.77				\$2,531.77				
Net amount mains.	237	2,288			\$394,380.02								

This includes relaying 16-inch pipe on Lafayette avenue near Trout Brook, of regrading street, an expense of \$4,677.97.

a Pumping station established for high service in fall of 1884.

b Pumping stations established for well plant at Vadnals lake, also Rice lakes.

c Pumping station established for high service in West St. Paul in fall of 1892.

d This includes laying the 20-inch force main to reservoir.

e This includes laying 9,234 feet of 30-inch supply main on Dale street from reservoir to Dale and Front, at an expense of \$38,365.78.

f This is for a period of 13 months.

g This includes laying 7,080 feet of 36-inch castiron force main from McCarron lake pumping station to high service reservoir, at an expense of \$49,347.64.

h Amount refunded.



## LIST OF VOUCHERS PAID FROM DEC. 1, 1895, TO DEC. 31, 1896.

DECEMBER, 1895.

No. of Voucher.	NAME.	CLAIM.	Amount.
7653	Jno. Wagener, city treasurer.....	Payroll for November, 1895....	\$4,114.58
7654	Jno. Wagener, city treasurer.....	Interest due Dec. 1, 1895.....	7,000.00
7655	A. D. Smith Co.....	Sawing planks.....	1.50
7656	Henry E. Wedelstaedt.....	Stationery.....	3.35
7657	Goodyear Rubber Co.....	Hose, packing, etc.....	15.28
7658	The Western Supply Co.....	Lead pipe, couplings, etc.....	18.35
7659	Noyes Bros. & Cutler.....	D. S. L. end putty.....	1.36
7660	T. L. Blood & Co.....	Lit. and putty.....	.48
7661	Nicols & Dean.....	Washers.....	.60
7662	The Crane-Ordway Co.....	Pipe couplings, etc.....	4.07
7663	Farwell, Ozmun, Kirk & Co.....	Powder, nails, etc.....	6.80
7664	Robinson, Cary & Co.....	Pipe couplings, etc.....	78.30
7665	Brown-Treacy Co.....	Stationery.....	3.05
7666	Cornplanter Oil Co.....	Gasoline.....	1.95
7667	Tierney & Co.....	Bran.....	1.40
7668	D. T. De Wolf.....	Hay.....	10.39
7669	Est. of Jas. Gilfillan.....	Rent of storage lot.....	25.00
7670	P. H. Kelly Mercantile Co.....	Oil, etc.....	26.00
7671	Franklin Machine Works.....	Machine work.....	1.00
7672	The N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
7673	Allen & Co.....	Livery.....	15.50
7674	Chas. Friend & Son.....	Leather.....	2.50
7675	J. G. Duggan.....	Sharpening tools, etc.....	4.65
7676	A. Decker & Co.....	Wire, nails, etc.....	1.80
7677	St. Paul Timber and Supply Co.....	Flng.....	173.10
7678	P. N. Lindquist.....	Horseshoeing.....	10.50
7679	Jno. Martin Lumber Co.....	Est. No. 2 and final lumber....	77.46
7680	Jno. Martin Lumber Co.....	Lumber.....	18.86
7681	Thos. Fitzpatrick.....	Carpenter work, etc.....	20.05
7682	Lauer Bros.....	Stone sill.....	1.50
7683	Fielding & Shepley.....	Repairing paving.....	139.71
7684	Neptune Meter Co.....	Meters and couplings.....	80.62
7685	Union Water Meter Co.....	Meters.....	204.00
7686	Odgen, Merrill & Greer.....	Lampwicks.....	.33
7687	A. S. Washburn.....	Electric light.....	15.00
7688	Geo. J. Mitsch & Co.....	Supplies.....	3.95
7689	Dan Cashill & Co.....	Horseshoeing.....	2.00
7690	D. L. Bell.....	Cement.....	4.20
7691	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	10.30
7692	Prendergast Bros.....	Galvanized tank, etc.....	37.75
7693	Pioneer Press Co.....	Ruled paper.....	4.50
7694	The Dispatch Printing Co.....	Advertising.....	3.06
7695	Theodore Vandiac.....	Est. No. 5, hauling coal, Vad- na's lake.....	11.62
7696	Wedelstaedt & Carmen.....	Postals and envelopes.....	9.50
7697	Millon & Young.....	Est. No. 7, pipe laying.....	353.73
7698	Patrick Doherty.....	Est. No. 4, pipe laying.....	175.93
7699	Ransom Subway Co.....	Est. No. 3, conduit, etc., at Otter lake.....	2,652.00
Total .....			\$15,355.73



## LIST OF VOUCHERS—Continued.

JANUARY, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
7700	Jno. Wagener, city treasurer.....	Payroll for December, 1895....	\$3,568.94
7701	Jno. Wagener, city treasurer.....	Interest due Jan. 1, 1896.....	5,850.00
7702	Jno. Wagener, city treasurer.....	Interest due Feb. 1, 1896.....	3,750.00
7703	Pioneer Fuel Co.....	Est. No. 4, fuel.....	321.75
7704	St. Paul Fire and Marine Ins. Co..	Insurance on shop, barn, etc..	21.80
7705	Smith & Farwell.....	Bookcase.....	16.00
7706	De Cou & Co.....	Netting.....	.50
7707	National Meter Co.....	Meters, etc.....	165.00
7708	Union Brass and Metal Mfg. Co..	Stopcocks.....	20.40
7709	Jno. G. Duggan.....	Sharpening tools, etc.....	10.90
7710	D. L. Bell.....	Cement.....	14.30
7711	Farwell, Ozmun, Kirk & Co.....	Hardware, etc.....	5.18
7712	H. C. Boyeson & Co.....	Stationery.....	10.80
7713	The Dispatch Printing Co.....	Advertising.....	1.36
7714	Daily Globe.....	Advertising.....	8.00
7715	Brown-Treacy & Co.....	Stationery.....	8.14
7716	P. N. Lindquist.....	Horseshoeing.....	10.25
7717	N. W. Shot and Lead Works.....	Lead pipe.....	33.66
7718	Franklin Machine Works.....	Machine work.....	1.00
7719	Pioneer Press Co.....	Blank books, etc.....	30.25
7720	P. H. Kelly Mercantile Co.....	Oil, etc.....	46.30
7721	Prendergast Bros.....	Chandeller globes, etc.....	1.30
7722	Myers & Co.....	Clock.....	4.75
7723	Adam Decker & Co.....	Hardware.....	6.85
7724	Chas. Friend & Son.....	Leather, etc.....	2.40
7725	Boerlinger & Son.....	Drawing ink.....	.50
7726	St. Paul Furniture Co.....	Oak rollers, etc.....	1.60
7727	T. L. Blood & Co.....	Paint.....	.30
7728	Theophile Vandlae.....	Est. No. 6, hauling coal, Vad- nals Lake.....	11.02
7729	Allen & Co.....	Livery.....	14.00
7730	Est. of Jas. Gillfillan.....	Rent of storage lot.....	25.00
7731	Fielding & Shepley.....	Repairing paving.....	11.10
7732	Odgen, Merrill & Greer.....	Lamps, etc.....	10.21
7733	Jameson, Hevener & Co.....	Feed.....	33.64
7734	Wedelstaedt & Carmen.....	Printing postals.....	3.00
7735	H. M. Smyth Printing Co.....	Envelopes.....	5.00
7736	Nicols & Dean.....	Bolts, etc.....	1.01
7737	The Western Supply Co.....	Plugs.....	.47
7738	The Pioneer Press Co.....	Advertising.....	13.50
7739	Smith & Farwell Co.....	Desk and chairs.....	16.00
7740	The Crane & Ordway Co.....	Galvanized pipe, etc.....	25.00
7741	Robinson & Cary Co.....	Valves, etc.....	33.13
7742	Mitsch Wagon and Carriage Co..	Sharpening tools, etc.....	17.77
7743	The N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
7744	Ransome Subway Co.....	Est. No. 4, Otter Lake con- duit.....	960.50
7745	Millon & Young.....	Est. No. 8, pipe laying.....	188.26
7746	Patrick Doherty.....	Est. No. 6, pipe laying.....	148.00
7747	Geo. J. Mitsch & Co.....	Supplies.....	5.35
7748	Boggs & Holt.....	Hay.....	69.65
7749	Dan'l Cashill.....	Horseshoeing.....	4.00
7750	St. Paul Building Co.....	Est. No. 1, engine house Vad- nals lake.....	387.00
7751	Chas. Stone.....	Est. No. 2, pumping wells, etc., Vadnals lake.....	1,280.00
7752	Jno. Caulfield, secretary.....	Postage, freight, etc.....	78.21
7753	Pioneer Fuel Co.....	Est. No. 5, fuel.....	1,361.02
7754	Mahle & Sutmar.....	Sharpening tools.....	.84
Total.....			\$18,622.16

## LIST OF VOUCHERS—Continued.

FEBRUARY, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
7755	Jno. Wagener, city treasurer.....	Payroll January, 1896.....	\$2,901.30
7756	Jno. Wagener, city treasurer.....	Interest due March 1, 1896.....	6,750.00
7757	Rich & Clymer.....	Envelopes, etc.....	14.00
7758	Standard Oil Co.....	Oil.....	4.00
7759	C. Y. Coffey.....	Electric lights and repairs.....	1.50
7760	St. Paul Building Co.....	Piles and blocking, Vadnais Lake.....	60.94
7761	National Meter Co.....	Est. No. 1, meters.....	300.00
7762	Hersey Mfg Co.....	Meters.....	42.25
7763	J. W. Cunningham & Co.....	Est. No. 1 and final, printing annual report.....	641.25
7764	Patrick Doherty.....	Est. No. 7, and final pipe laying, Dale street.....	101.89
7765	Million & Young.....	Est. No. 9, pipe laying.....	157.41
7766	N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
7767	J. G. Duggan.....	Repairing tools, etc.....	5.50
7768	Daily Globe.....	Advertising.....	1.00
7769	Est. of Jas. Gilfillan.....	Rent of storage lot.....	25.00
7770	P. N. Lindquist.....	Horseshoeing.....	6.00
7771	Wedelstaedt & Carmen.....	500 exchange slips.....	1.50
7772	H. C. Boyeson & Co.....	Stationery.....	10.45
7773	Brown, Treacy & Co.....	Frontage tax books.....	13.75
7774	Cornplanter Oil Co.....	Oil.....	18.29
7775	The Western Supply Co.....	Pipe and fittings.....	.61
7776	Robinson & Cary Co.....	Machine supplies, etc.....	10.90
7777	The Crane & Ordway Co.....	Supplies.....	4.68
7778	Farwell, Ozmun, Kirk & Co.....	Supplies.....	1.34
7779	St. Paul Lime and Cement Co.....	Cement.....	.40
7780	Jameson, Hevener & Co.....	Oats.....	35.53
7781	Allen & Co.....	Livery.....	19.00
7782	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	16.97
7783	P. H. Kelly Mercantile Co.....	Candles, brooms, etc.....	14.85
7784	P. H. Kelly Mercantile Co.....	Est. No. 1, lubricating oils.....	39.60
7785	D. L. Bell.....	Cement, etc.....	13.50
7786	Jno. Boehm.....	Wood for Baldwin Station.....	31.50
7787	Jno. Stock.....	Wood.....	18.75
7788	Jno. Bcehm.....	Wood.....	18.75
7789	Anton Heller.....	Wood.....	37.50
7790	A. Hoffman.....	Wood.....	30.00
7791	Jos. Kunsher, Jr.....	Wood.....	37.50
7792	Jno. Novak.....	Wood.....	37.50
7793	Wm. Molitor.....	Wood.....	37.50
7794	Frank Hoffman.....	Wood.....	37.50
7795	H. A. Gatzow.....	Wood.....	37.50
7796	Chas. Anderson.....	Wood.....	35.00
7797	Jno. Yost.....	Wood.....	30.00
7798	August Thou.....	Wood.....	37.50
7799	Michael Gross.....	Wood.....	30.00
7800	Jas. Grosskopf.....	Wood.....	30.00
7801	Chas. Kunshier.....	Wood.....	30.00
7802	Fred Wenzel.....	Wood.....	37.50
7803	Leon Dupree.....	Wood.....	37.50
7804	Yost Yost.....	Wood.....	30.00
7805	Jacob Molitor.....	Wood.....	37.50
7806	H. K. Wallan.....	Wood.....	37.50
7807	Hans Hanson.....	Wood.....	38.13
7808	Leon F. Dupree.....	Wood.....	32.50
7809	Jno. Hughes.....	Wood.....	30.00
7810	Frank Kraus.....	Wood.....	37.50
7811	Chas. Rehbein.....	Wood.....	37.50
7812	Albert Rehbein.....	Wood.....	37.50
7813	Phil F. Lamotte.....	Wood.....	30.00
7814	A. Totte.....	Wood.....	30.00
7815	Ambrose Brisitt.....	Wood.....	18.75
7816	Henry Dupree.....	Wood.....	37.50
7817	Theophile Vandiac.....	Est. No. 7, hauling coal, Vadnais lake.....	21.47
7818	The E. P. Allis Co.....	Est. No. 2, and final.....	3,784.00

## LIST OF VOUCHERS—Continued.

FEBRUARY, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
7819	J. F. McCarthy.....	Est. No. 14, final well at Centerville .....	1,400.00
7820	J. F. McCarthy.....	Taking pipe out of well, Vadnais Lake.....	10.00
7821	C. E. Green, register of deeds....	Making abstracts.....	28.13
7822	Distpatch Printing Co.....	Advertising .....	12.00
7823	Tierney & Co.....	Feed .....	.89
7824	Dan Cashill.....	Horseshoeing .....	1.00
7825	A. S. Washburn.....	Electric light.....	15.00
7826	Pioneer Fuel Co.....	Est. No. 6, fuel.....	258.64
7827	Kenny Bros.....	Boiler .....	130.00
7828	Jno. Caulfield, secretary.....	Cash advanced.....	62.93
7829	James Shiely.....	Drayage .....	0.23
Total .....			\$17,979.63



## LIST OF VOUCHERS—Continued.

MARCH, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
7830	Jno. Wagener, city treasurer.....	Payroll February, 1896.....	\$2,632.43
7831	Andreas Frischman.....	Wood.....	37.50
7832	Jos. Arth.....	Wood.....	33.75
7833	Erick Larson.....	Wood.....	23.75
7834	A. N. Dyer.....	Wood.....	28.75
7835	Jas. Husick.....	Wood.....	37.50
7836	Frank McGlynn.....	Wood.....	18.75
7837	Sam'l L. Neal.....	Wood.....	37.50
7838	Peter Kammerer.....	Wood.....	37.50
7839	Fred Lenz.....	Wood.....	30.50
7840	F. A. Leander.....	Wood.....	38.13
7841	August Rehbein.....	Wood.....	37.50
7842	Jno. Flor.....	Wood.....	30.00
7843	Mike Flor.....	Wood.....	30.00
7844	H. Roger.....	Wood.....	37.50
7845	Jos. Lichtscheidl.....	Wood.....	37.50
7846	Bert Hughes.....	Wood.....	37.50
7847	J. G. Duggan.....	Repairing buggy, etc.....	75.75
7848	Pioneer Fuel Co.....	Est. No. 7, fuel.....	1,230.11
7849	Theophile Vandlac.....	Est. No. 8, hauling coal.....	34.70
7850	P. N. Lindquist.....	Horseshoeing.....	5.00
7851	Minnesota Engine Works.....	Repairing check valves.....	.45
7852	P. H. Kelly Mercantile Co.....	Candles.....	5.20
7853	Wedelstaedt & Carmen.....	Printing.....	5.95
7854	H. C. Boyeson & Co.....	Stationery.....	6.20
7855	Prendergast Bros.....	Stove wicks.....	.50
7856	Allen & Co.....	Livery.....	24.00
7857	Jno. Rogers, Jr., & Bros.....	Insurance.....	12.00
7858	Pioneer Press Co.....	Canvas cover for book.....	1.75
7859	N. W. Telephone Ex. Co.....	Rent of telephone.....	7.25
7860	Million & Young.....	Est. No. 10, pipe laying.....	110.48
7861	National Meter Co.....	Est. No. 2, meters.....	307.75
7862	Pittsburg Meter Co.....	Meters.....	234.40
7863	Crane-Ordway Co.....	Pipe fittings, etc.....	9.71
7864	N. W. Engineering Co.....	1 McCreary shade.....	1.25
7865	Geo. J. Mitsch & Co.....	Supplies.....	11.45
7866	D. L. Bell.....	Cement.....	4.20
7867	Fairbanks, Morse & Co.....	Testing scale.....	4.25
7868	Jno. Martin Lumber Co.....	Lumber.....	14.32
7869	Geo. Krawezak.....	Wood.....	37.50
7870	Dan Cashill.....	Horseshoeing.....	2.00
7871	Board of fire commissioners.....	Condemned hose.....	60.00
7872	Drs. McLaren and De Witt.....	Prof. services, And. Falk.....	14.00
7873	The Western Supply Co.....	Pipe fittings.....	.86
7874	Union Brass and Metal Mfg Co.....	Copper screw.....	1.75
7875	Est. of Jas. Gilfillan.....	Rent of storage lot.....	25.00
7876	Daily Globe.....	Advertising.....	1.56
7877	St. Paul Building Co.....	Est. No. 2 and final, pump house, Vadnais lake.....	10.00
7878	Boeringer & Son.....	Drawing ink.....	.50
7879	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	8.76
7880	St. Paul Plow Co.....	Special castings.....	18.88
7881	Cornplanter Oil Co.....	Oil.....	6.24
7882	Robinson & Cary Co.....	Waste, etc.....	33.61
7883	Farwell, Ozmun, Kirk & Co.....	Shovels, etc.....	9.73
7884	National Meter Co.....	Est. No. 3, meters.....	303.00
7885	C. Neumann.....	Lunches.....	17.75
7886	Wedelstaedt & Carmen.....	Printing.....	7.50
7887	Chas. Stone.....	Est. No. 3, pump, well, etc., Vadnais Lake.....	107.10
7888	Jno. Caulfield, secretary.....	Cash advanced.....	53.17
7889	Jno. Wagener, city treasurer.....	Interest due April 1, 1896.....	25,000.00
7890	Jno. F. Hale.....	Wood.....	36.87
Total .....			\$31,028.51



## LIST OF VOUCHERS—Continued.

APRIL, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
7891	Clement Cardinal.....	Land for right of way.....	\$120.00
7892	David Capistrant.....	Land for right of way.....	240.00
7893	Jno. H. Sherman.....	Land for right of way.....	150.00
7894	Jno. Wagener, city treasurer.....	Payroll March, 1896.....	3,064.10
7895	Jno. Wagener, city treasurer.....	Interest due May 1, 1896.....	\$,750.00
7896	C. E. Green, register of deeds.....	Abstracts right of way land..	51.50
7897	The Western Supply Co.....	Lead pipe.....	94.77
7898	Million & Young.....	Est. No. 11, pipe laying, 1895..	35.02
7899	Wedelstaedt & Carmen.....	Printing envelopes.....	1.50
7900	D. L. Curtice.....	Mounted plates, city atlas.....	6.00
7901	Percy W. Parker.....	Insurance on office.....	82.50
7902	Sherwood, Sutherland & Co.....	Pile driving, McCarron Lake.....	168.30
7903	P. H. Kelly Mercantile Co.....	Oil, candles, etc.....	17.18
7904	P. H. Kelly Mercantile Co.....	Est. No. 2, lubricating oil.....	30.85
7905	National Meter Co.....	Est. No. 4, meters.....	300.00
7906	The Engineering Record.....	1 year sub. to March 1, 1897..	5.00
7907	Prendergast Bros.....	Oil heater, Venturi meter house.....	6.00
7908	Pioneer Fuel Co.....	Advertising.....	2.70
7909	Minnesota Engine Works.....	Repairing valve, head pump..	33.60
7910	Dr. C. F. Sweeney.....	Professional services, man hurt by blast.....	9.00
7911	Pioneer Fuel Co.....	Est. No. 8, fuel.....	199.21
7912	Pioneer Press Co.....	Printing water bills.....	60.75
7913	Allen & Co.....	Livery.....	9.00
7914	H. C. Boyeson & Co.....	Stationery.....	3.70
7915	P. N. Lindquist.....	Horseshoeing.....	7.00
7916	Wedelstaedt & Carmen.....	Envelopes.....	3.00
7917	J. W. Martin Lumber Co.....	Lumber.....	8.00
7918	Cornplanter Oil Co.....	Gasoline.....	.65
7919	The Western Supply Co.....	Pig tin, check valves, etc.....	19.71
7920	The Crane-Ordway Co.....	Pipe, valves, etc.....	33.57
7921	Farwell, Ozmun, Kirk & Co.....	Powder, lantern, globes, etc..	2.74
7922	Robinson & Cary Co.....	Oil filter, tools, etc.....	27.97
7923	Union Brass and Metal Mfg Co..	Brass goods.....	50.54
7924	Est. of Jas. Gillfillan.....	Rent of storage lot.....	25.00
7925	Mahle & Sutmar.....	Sharpening tools.....	5.68
7926	Dan Cashill & Co.....	Horseshoeing.....	2.00
7927	Chas. Friend & Son.....	Harness fittings.....	4.80
7928	J. G. Duggan.....	Blacksmithing.....	10.35
7929	Morton Jones.....	Wood for Baldwin Lake.....	37.50
7930	Andrew Toomey.....	Est. No. 4, supplement to No. 3	35.00
7931	Jno. Caulfield, secretary.....	Cash advanced.....	48.80
7932	Water and Gas Review Pub. Co..	1 year sub. to April, 1897.....	1.00
7933	Theo. Vandiac.....	Est. No. 9, hauling coal.....	11.34
7934	Smith & Farwell Co.....	Desk, etc., supt. office.....	41.75
7935	Mitsch Wagon and Carriage Co..	Sharpening tools.....	5.23
7936	Peter Cardinal.....	Land for right of way.....	240.00
7937	Brown, Treacy & Co.....	Job printing.....	6.00
7938	The Dispatch Printing Co.....	Advertising.....	4.50
7939	C. E. Green, register of deeds.....	Abstract and record.....	2.25
Total .....			\$14,045.06

## LIST OF VOUCHERS—Continued.

MAY, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
7940	St. Paul Furniture Co.	Repairing bookcase.	\$12.00
7941	Jas. H. Nelson.	Wood for Baldwin Lake.	34.00
7942	The N. W. Telephone Ex Co.	Repair and rent of telephones.	11.75
7943	Wedelstaedt & Carmen	Printing	9.74
7944	Pioneer Press Co.	Meter billbook.	13.80
7945	Dally Globe.	Advertising	4.50
7946	The Leonard Soap Co.	Oil soap.	4.00
7947	Millon & Young.	Est. No. 12, final laying mains	57.13
7948	H. Mueller Mfg Co.	Drills and taps.	36.00
7949	National Meter Co.	Est. No. 5, meters.	300.00
7950	The Engineering Record.	Advertising for wells.	6.40
7951	Fire and Water.	Advertising for wells.	5.00
7952	T. L. Blood & Co.	Paint for boat.	2.47
7953	The Engineering News Pub. Co.	Advertising for wells.	6.20
7954	Andrew Toomey.	Est. No. 5, and final, pump- ing station, West St. Paul.	15.00
7955	Jno. Wagener, city treasurer.	Interest due June 1, 1896.	7,000.00
7956	Jno. Wagener, city treasurer.	Payroll for April, 1896.	3,112.16
7957	Antoine Lamotte.	Land for right of way.	180.00
7958	Robinson & Cary Co.	Valves, rubber, wire, cloth, etc.	114.00
7959	Farwell, Ozmun, Kirk & Co.	Tools	7.48
7960	Tierney & Co.	Feed	1.00
7961	P. H. Kelly Mercantile Co., W. B. Jordan, assignee.	Candies	6.40
7962	P. H. Kelly Mercantile Co., W. B. Jordan, assignee.	Est. No. 3, lubricating oils.	26.60
7963	Pioneer Fuel Co.	Est. No. 9, fuel.	105.85
7964	Theo Vandiac.	Est. No. 10, hauling coal, Vadnais lake.	11.00
7965	Allen & Co.	Livery	3.00
7966	Jno. Martin Lumber Co.	Lumber	10.56
7967	Pioneer Press Co.	Printing	31.25
7968	Franklin Machine Works.	Repairing tapping machine.	1.50
7969	Minnesota Engine Works.	Repairs West side pump.	4.46
7970	So. Park Foundry and Mach. Co.	Repairing hydrant valves.	20.70
7971	Crane-Ordway Co.	Pipe, packing, etc.	40.00
7972	Lovering Shoe Co.	Rubber boots.	21.00
7973	N. W. Telephone Co.	Rent of telephone and repairs.	8.75
7974	J. G. Duggran.	Blacksmithing	12.05
7975	Dan Cashill.	Horseshoeing	4.00
7976	J. W. Cunningham.	Printing specifications conduit, Centerville	10.50
7977	P. N. Lindquist.	Horseshoeing	2.00
7978	D. L. Bell.	Fire brick and cement.	22.49
7979	The Anoka Herald.	Publishing right of way notice	70.20
7980	Chas. D. Lynch.	50 2-inch drip valves.	200.00
7981	Jno. Caulfield, secretary.	Cash advanced per voucher.	56.64
7982	H. C. Boyeson.	Stationery	19.25
7983	Mitsch Wagon and Carriage Co.	Hangers for force main.	14.62
7984	Est. of Jas. Gillilan.	Rent of storage lot.	25.00
7985	Cornplanter Oil Co.	Oil and gasoline.	16.17
7986	The Western Supply Co.	Lead pipe, etc.	55.07
7987	St. Paul Furniture Co.	Lumber	5.80
7988	Union Brass and Metal Mfg Co.	Est. No. 1, brass goods.	57.51
7989	Union Brass and Metal Mfg Co.	Springs for pumps, valves, etc.	30.90
7990	Boggs & Holt.	Oats	44.00
7991	Hennessey & Cox.	Wire rope.	54.72
7992	The Western Supply Co.	Lead pipe.	1,355.89
7993	Francis Lamotte.	Land for right of way.	65.00
7994	Geo. J. Mitsch & Co.	Supplies	13.20

## LIST OF VOUCHERS—Continued.

MAY, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
7995	A. B. Bell.....	Ins. Union Park Station.....	19.50
7996	The Anoka Herald.....	Advertising condemnation for right of way.....	25.50
7997	Chas. E. Green, register of deeds..	Abstracts for right of way...	13.75
7998	Fire and Water.....	Advertising for wooden con- duit .....	6.00
7999	The Engineering Record.....	Advertising for wooden con- duit .....	5.80
8000	The Engineering News Pub. Co..	Advertising for wooden con- duit .....	11.20
8001	Jos. Lamotte.....	Land at Centerville.....	1,050.00
8002	Jos. Lamotte.....	Land at Centerville.....	600.00
8003	Frank Hart.....	Commissioner condemn land..	25.00
8004	L. D. Browning.....	Commissioner condemn land..	25.00
8005	C. D. Tuthill.....	Commissioner condemn land..	25.00
	Total .....		\$15,174.71



## LIST OF VOUCHERS—Continued.

JUNE, 1896.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
8006	C. L. Horst, city treasurer.....	Payroll for May, 1896.....	\$4,316.17
8007	C. L. Horst, city treasurer.....	Interest due July 1, 1896.....	5,850.00
8008	Dan Cashill.....	Horseshoeing.....	8.25
8009	Union Brass and Iron Works.....	Est. No. 2, brass goods.....	235.54
8010	Union Brass and Metal Mfg Co..	Pump springs.....	13.75
8011	Chas. Friend & Son.....	Umbrella, etc.....	2.75
8012	Merrill, Odgen & Greer.....	Water cooler, etc.....	3.15
8013	Farwell, Ozmun, Kirk & Co.....	Hardware.....	36.46
8014	St. Paul Tent and Awning Co....	Awnings.....	18.75
8015	Pioneer Press Co.....	Printing.....	7.50
8016	Prendergast Bros.....	Thimble stops.....	.70
8017	T. L. Blood & Co.....	Paints, etc.....	10.25
8018	N. W. Engineering Co.....	Electric lamps.....	11.00
8019	Boerlinger & Son.....	Level bulb in transit.....	1.00
8020	N. W. Stamp Works.....	Date stamps, etc.....	1.65
8021	Minnesota Engine Works.....	Machine work.....	4.75
8022	A. Decker.....	Lawn mower.....	4.50
8023	Justus Kahlert.....	Sharpening lawn mower.....	1.25
8024	Crane-Ordway Co.....	Stop boxes, etc.....	77.15
8025	The Western Supply Co.....	Pipe fittings, etc.....	3.35
8026	The Western Supply Co.....	Est. No. 2, lead pipe, etc.....	82.44
8027	The St. Paul Rubber Co.....	Rubber boots.....	14.04
8028	St. Paul Sash, Door & Lbr. Co....	Screens.....	7.75
8029	J. G. Duggan.....	Repairing buggy, etc.....	35.65
8030	Mahle & Sutmar.....	Sharpening tools, etc.....	2.83
8031	Wedelstaedt & Carmen.....	Printing.....	4.75
8032	Cornplanter Oil Co.....	Oil.....	6.73
8033	Est. Jas. Gilfillan.....	Rent of storage lot.....	25.00
8034	Daily Globe.....	Advertising.....	22.44
8035	P. H. Kelly Mercantile Co.....	Brooms, etc.....	17.90
8036	P. H. Kelly Mercantile Co.....	Est. No. 4, lubricating oils...	17.88
8037	H. C. Boyeson & Co.....	Stationery.....	10.08
8038	St. Paul Rubber Co.....	Hose clamps, etc.....	8.33
8039	A. H. Fitch, clerk district court..	Award damage for land, Centerville.....	1,324.40
8040	H. M. Smyth Printing Co.....	Printing.....	3.90
8041	Thos. Brennan Lumber Co.....	Est. No. 1, and final, lumber.	305.00
8042	Tierney & Co.....	Feed.....	.58
8043	Jno. Caulfield, secretary.....	Cash advanced.....	147.53
8044	Pioneer Fuel Co.....	Est. No. 10, fuel.....	1,173.65
8045	So. Park Foundry and Mach. Co..	Est. No. 1, valves.....	118.00
8046	Jno. Martin Lumber Co.....	Lumber.....	36.20
8047	Chas. Stone.....	Est. No. 4, and final, pump well, etc., Vadnais Lake....	300.00
8048	Jas. Lamotte.....	Making road to right of way.	35.00
8049	Jas. Carpenter.....	Lumber for box drain.....	5.37
8050	J. F. McCarthy.....	Est. No. 1, artesian well, Centerville.....	4,845.00
Total.....			\$19,164.37



## LIST OF VOUCHERS—Continued.

JULY, 1896.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
8051	C. L. Horst, city treasurer.....	Payroll for June, 1896.....	\$4,467.95
8052	C. L. Horst, city treasurer.....	Interest due Aug. 1, 1896.....	3,750.00
8053	Board of Fire Commissioners.....	Condemned hose.....	60.00
8054	Allen & Co.....	Livery.....	21.00
8055	Sampson & Dennis.....	Valve seating machine.....	67.00
8056	So. Park Foundry and Mach. Co.....	Est. No. 1, valves.....	776.80
8057	Bingham & Taylor.....	Est. No. 1, stop boxes, etc.....	1,007.74
8058	M. J. Drummond.....	Est. No. 1, cast iron pipe.....	1,913.12
8059	Dennis Long & Co.....	Est. No. 1, cast iron pipe.....	15,297.51
8060	The Ohio Pipe Co.....	Est. No. 1, water pipe.....	3,089.79
8061	Hersey Mfg. Co.....	Meter fittings.....	64.10
8062	National Meter Co.....	Est. No. 6, meters.....	840.00
8063	Wm. H. McIntyre.....	Row boat for Lake Phalen.....	16.00
8064	P. Schollert.....	Papering and kalsomining.....	110.82
8065	Jos. N. Forcier.....	Board of engineers.....	12.25
8066	The N. W. Telephone Ex. Co.....	Rent of telephone.....	7.25
8067	Joel T. Million.....	Est. No. 1, pipe laying, Duke street.....	518.22
8068	Patrick Doherty.....	Est. No. 1, pipe laying.....	155.55
8069	Ninnis & Meyer.....	Electric bells and speaking tube.....	23.27
8070	A. & W. McGuigan.....	Carpenter work.....	4.20
8071	A. R. Starkey.....	One 16-inch iron pipe.....	16.88
8072	St. Paul Plow Co.....	Est. No. 1, special castings.....	280.42
8073	The N. W. Telephone Ex. Co.....	Rent of telephone.....	7.25
8074	Jno. Martin Lumber Co.....	Lumber.....	8.00
8075	The Crane-Ordway Co.....	Packing, pipe, fittings, etc.....	70.89
8076	Daily Globe.....	Advertising.....	9.11
8077	Robinson & Cary Co.....	Waste pipe, fittings, etc.....	23.18
8078	The Western Supply Co.....	Pipe and pipe fittings.....	30.22
8079	Aulen & Co.....	Livery.....	4.00
8080	P. H. Kelly Mercantile Co.....	Est. No. 5, lubricating oils.....	8.22
8081	P. H. Kelly Mercantile Co.....	Tea lead, candles, etc.....	26.59
8082	Noyes Bros. & Cutler.....	Clover seed, Vadnais Lake.....	4.78
8083	New England Furniture Co.....	Carpets for office.....	80.42
8084	Smith & Farwell Co.....	Chairs for office.....	15.00
8085	H. C. Boyeson.....	Stationery.....	5.65
8086	N. W. Stamp Works.....	Bank deposit stamps.....	2.25
8087	Martin Feist.....	Lunch for men cleaning conduit.....	3.50
8088	J. G. Duggan.....	Blacksmithing.....	5.60
8089	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	14.89
8090	D. L. Bell.....	Cement.....	16.50
8091	Dan Cashill.....	Horseshoeing.....	7.50
8092	Pioneer Fuel Co.....	Est. No. 11, fuel.....	112.81
8093	E. C. Huebner.....	Lumber.....	26.49
8094	R. Wellish.....	Est. No. 3, valves.....	72.00
8095	Jas. Shiely.....	Est. No. 1, drayage.....	212.06
8096	Farwell, Ozmun, Kirk & Co.....	Tools.....	16.90
8097	Jno. Caulfield, secretary.....	Cash advanced by voucher.....	112.55
8098	Nicholas Feyer.....	Est. No. 1, hauling to Centerville.....	151.99
8099	Dennis Long & Co.....	Est. No. 2, cast iron pipe.....	12,178.72
8100	Dennis Long & Co.....	Est. No. 1, Centerville.....	1,731.78
8101	The Ohio Pipe Co.....	Est. No. 2, cast iron pipe.....	1,669.26
8102	So. Park Foundry and Mach. Co.....	Est. No. 1, fire hydrants.....	263.50
8103	St. Paul Foundry Co.....	Est. No. 1, specials Centerville.....	1,938.16
8104	Jas. Shiely.....	Drayage to office.....	6.63
8105	Est. of Jas. G. Hillan.....	Rent of storage lot.....	25.00
8106	Thos. Brennan Lumber Co.....	Lumber.....	73.88
8107	Geo. H. Lawes & Co.....	Paving brick.....	14.50

## LIST OF VOUCHERS—Continued.

JULY, 1895—Continued.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
8108	Odgen, Merrill & Greer.....	Glasses .....	\$0.29
8109	Cornplanter Oil Co.....	Gasoline .....	1.95
8110	H. Wedelstaedt & Co.....	Drawing cloth and paper....	6.88
8111	A. Decker & Co.....	Nails .....	.50
8112	R. Price.....	Veterinary services.....	Void
8113	C. E. Green, register of deeds....	Recording deeds and abstracts	4.25
8114	R. H. Hunt & Co.....	Inspecting pipe.....	403.51
8115	Wedelstaedt & Carmen.....	Printing .....	20.10
8116	J. F. McCarthy.....	Est. No. 2, wells at Centerville	2,887.96
Total .....			\$54,775.09

## LIST OF VOUCHERS—Continued.

AUGUST, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
8117	C. L. Horst, city treasurer.....	Payroll for July, 1896.....	\$4,349.36
8118	C. L. Horst, city treasurer.....	Interest due Sept. 1, 1896.....	6,750.00
8119	Patrick Doherty.....	Est. No. 2, pipe laying.....	645.57
8120	J. T. Millon.....	Est. No. 2, and final, main on Duke street.....	509.76
8121	Jas. Shielly.....	Est. No. 2, drayage.....	790.06
8122	Fielding & Shepley.....	Relaying pavement.....	47.14
8123	Jno. Rogers, Jr., & Bro.....	Fire insurance.....	82.50
8124	C. L. Horst, city treasurer.....	Street sprinkling assessment, 1894-95.....	10.20
8125	Jas. N. Forcier.....	Teaming for engineers.....	11.50
8126	L. L. May & Co.....	Lawn seed.....	7.00
8127	N. W. Shot and Lead Co.....	Lead pipe.....	65.63
8128	Scribner-Libby Co.....	Iron hood for chimney, Vadnais lake.....	11.00
8129	J. G. Duggan.....	Blacksmithing.....	6.20
8130	So. Park Foundry and Mach. Co..	Est. No. 4, valves.....	320.00
8131	So. Park Foundry and Mach. Co..	Est. No. 2, hydrants.....	564.30
8132	Dennis Long & Co.....	Est. No. 3, pipe for city.....	7,797.27
8133	Dennis Long & Co.....	Est. No. 2, pipe for Centerville	3,651.37
8134	National Meter Co.....	Est. No. 7, meters.....	900.00
8135	The Ohio Pipe Co.....	Est. No. 3, pipe.....	900.16
8136	Bingham & Taylor.....	Est. No. 2, valve boxes.....	81.00
8137	H. C. Boyeson & Co.....	Stationery.....	12.65
8138	Wedelstaedt & Carmen.....	Printing.....	3.50
8139	Dan Cashill & Co.....	Horseshoeing.....	5.00
8140	Est. Jas. Gillilan.....	Rent of storage lot.....	25.00
8141	Pioneer Press Co.....	Advertising.....	1.20
8142	St. Paul Stone Co.....	Cement tiles.....	4.80
8143	Minnesota Engine Works.....	Machine work on pump.....	2.00
8144	D. F. De Wolf.....	Hay.....	11.28
8145	P. N. Lindquist.....	Horseshoeing.....	4.00
8146	Allen & Co.....	Livery.....	13.50
8147	Union Brass and Metal Mfg Co..	Brass springs for pump, Baldwin lake.....	3.75
8148	Mitsch Wagon and Carriage Co..	Sharpening tools, etc.....	15.99
8149	Jno. Martin Lumber Co.....	Lumber.....	18.13
8150	Cornplanter Oil Co.....	Gasoline.....	1.30
8151	D. L. Bell.....	Cement.....	11.10
8152	Chas. Friend & Son.....	Harness fittings.....	5.40
8153	A. Decker & Co.....	Tools for reservoir, etc.....	2.85
8154	Pioneer Fuel Co.....	Est. No. 2, fuel.....	342.18
8155	Theo. Vandiac.....	Est. No. 11, hauling coal, Vadnais lake.....	11.06
8156	P. H. Kelly Mercantile Co.....	Soap, lye, etc., McCarron Lake	7.35
8157	P. H. Kelly Mercantile Co.....	Est. No. 6, lubricating oils...	45.68
8158	F. W. Luley & Son.....	Tallow for plumbing.....	.50
8159	Robinson & Cary Co.....	Tools, etc.....	11.88
8160	Farwell, Ozmun, Kirk & Co.....	Powder, nails and tools.....	39.26
8161	The Crane-Ordway Co.....	Pipe and pipe fittings.....	42.40
8162	Geo. J. Mitsch & Co.....	Supplies.....	9.10
8163	L. A. Plaster & Co.....	Painting pump house, Vadnais	34.00
8164	A. W. McGuigan.....	Office at Centerville.....	90.00
8165	The Western Supply Co.....	Pipe fittings.....	2.22
8166	R. W. Hunt & Co.....	Inspecting pipe.....	168.27
8167	The N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
8168	Jas. Ceyriac.....	Hay.....	5.00
8169	The N. W. Telephone Ex. Co.....	Rent of private line instruments.....	25.00
8170	J. W. Cunningham & Co.....	50 division books.....	8.00
8171	A. P. Smith.....	Est. No. 4, sleeves and valves.	388.00

## LIST OF VOUCHERS—Continued.

AUGUST, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8172	St. Paul Plow Co.....	Est. No. 2, specials for city..	140.71
8173	N. W. Shot and Lead Works.....	Est. No. 1 and final, pig lead..	1,413.55
8174	Brown, Treacy & Co.....	200 specifications.....	23.00
8175	Henry E. Lee, county treasurer..	Taxes on right of way prop- erty .....	21.57
8176	Jno. Caulfield, secretary.....	Cash advanced per voucher...	30.00
8177	St. Paul Sash, Door and L. Co...	24 fire hydrant boxes.....	7.20
8178	Daily Globe.....	Advertising .....	8.57
8179	David Capistrant.....	Right of way .....	150.00
8180	Clement Cardinal.....	Earth for conduit line.....	100.00
8181	Hennessey & Cox.....	Est. No. 1, conduit line, Cen- terville .....	3,655.00
8182	Hennessey & Cox.....	Est. No. 1, engine house, Cen- terville .....	1,275.00
8183	J. F. McCarthy.....	Est. No. 3, wells at Center- ville .....	5,087.96
8184	N. Feyen.....	Est. No. 1, laying pipe and connecting wells .....	55.50
8185	N. Feyen.....	Est. No. 2, drayage to Cen- terville .....	18.01
Total .....			\$41,468.89



## LIST OF VOUCHERS—Continued.

SEPTEMBER, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
8186	Chas. L. Horst, city treasurer...	Payroll for August, 1896.....	\$4,869.61
8187	Chas. L. Horst, city treasurer...	Interest due Oct. 1, 1896.....	25,000.00
8188	National Meter Co.....	Est. No. 8, meters.....	600.00
8189	Fairbanks, Morse & Co.....	Testing scales, Lake Vadnais.....	2.50
8190	J. W. Cunningham & Co.....	Job printing.....	16.40
8191	The N. W. Telephone Ex. Co.....	Rent of telephones, September.....	7.25
8192	J. G. Duggan.....	Blacksmithing.....	1.60
8193	Joseph Cartier.....	Rent of portable engines, Centerville.....	25.50
8194	Joseph Carpenter.....	Lumber.....	20.16
8195	David Capistrant.....	Oak stringers for bridge.....	2.80
8196	Joseph Trudeau.....	Nails for bridges.....	1.33
8197	M. J. Drummond.....	Est. No. 2 and final, 8 to 20 inch pipe for Centerville.....	47.49
8198	The Ohio Pipe Co.....	Est. No. 4, and final, 6 to 16-inch pipe for city.....	341.02
8199	Est. Jas. Gilfillan.....	Rent of storage lot.....	25.00
8200	H. E. Wedelstaedt.....	Drawing paper.....	3.50
8201	P. H. Kelly Mercantile Co.....	Est. No. 7, lubricating oils.....	7.75
8202	P. H. Kelly Mercantile Co.....	Brooms, candles, etc.....	8.20
8203	St. Paul Sidewalk Co.....	Cement flagging.....	2.15
8204	T. L. Blood & Co.....	Oil and turpentine.....	2.48
8205	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	4.92
8206	Scribner-Libby Co.....	Roof on stable and shop.....	39.00
8207	D. L. Bell.....	Louisville cement.....	8.85
8208	Pioneer Press Co.....	Advertising water rents due.....	7.20
8209	G. Sommers & Co.....	G. A. R. decorations, office.....	6.10
8210	Chas. Friend & Son.....	Harness fittings.....	3.95
8211	Wedelstaedt & Carmen.....	Printing postal cards and envelopes.....	5.25
8212	Franklin Machine Works.....	Sharpening drill.....	1.00
8213	Griggs Bros.....	5,900 pounds oats.....	36.88
8214	H. C. Boyeson & Co.....	Blank books and stationery.....	64.35
8215	P. N. Lindquist.....	Horseshoeing.....	2.00
8216	Dan'l Cashill & Co.....	Horseshoeing.....	6.00
8217	The Western Supply Co.....	Pipe, pipe fittings, packing, etc.....	48.64
8218	Union Brass and Metal Mfg Co.....	Brass bolts, etc.....	24.20
8219	Minnesota Engine Works.....	Repairing revolution counter.....	.75
8220	Crane-Ordway Co.....	Pipe fittings, etc.....	40.38
8221	Farwell, Ozmun, Kirk & Co.....	Nails and tools.....	13.01
8222	St. Paul Rubber Co.....	8 pairs men's hip boots.....	30.64
8223	Cornplanter Oil Co.....	Oil.....	6.50
8224	Tierney & Co.....	Bran.....	.80
8225	F. W. Luley & Son.....	Tallow.....	2.40
8226	Fairbanks, Morse & Co.....	Est. No. 1, pipelaying to reservoir.....	593.41
8227	Theo. Vandlac.....	Est. No. 12, hauling coal to Vadnais.....	23.33
8228	Pioneer Fuel Co.....	Est. No. 13, fuel.....	1,396.77
8229	Western Supply Co.....	Commutator for dynamo.....	32.35
8230	Daily Globe.....	Advertising.....	10.54
8231	Martin Feist.....	Lunch for men cleaning conduit.....	3.50
8232	John Caulfield, secretary.....	Cash advanced for voucher.....	70.49
8233	So. Park Foundry and Mach. Co.....	Est. No. 5, valves.....	1,372.00
8234	St. Paul Plow Co.....	Est. No. 3, special castings.....	362.71
8235	Allen & Co.....	Livery.....	17.00
8236	Dispatch Printing Co.....	Advertising.....	12.00
8237	Hennessey & Cox.....	Est. No. 2, Centerville conduit.....	6,128.16

## LIST OF VOUCHERS—Continued.

SEPTEMBER, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8238	Hennessey & Cox.....	Est. No. 2, engine house, Centerville .....	3,995.00
8239	J. F. McCarthy.....	Est. No. 4, wells at Center- ville .....	1,463.19
8240	N. Feyen.....	Est. No. 2, connecting wells at Centerville .....	807.50
8241	Adam Decker.....	Hardware .....	1.65
8242	Mahle & Sutmar.....	Repairing buggies, etc.....	6.90
8243	P. Doherty.....	Est. No. 3, pipelaying, city...	1,436.04
8244	St. Paul Foundry Co.....	Est. No. 2, specials for Cen- terville .....	1,451.03
8245	N. Feyen.....	Est. No. 3, drayage to Center- ville .....	79.44
	Total .....	.....	\$50,410.57

## LIST OF VOUCHERS—Continued.

OCTOBER, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
8246	C. L. Horst, city treasurer.....	Interest due Nov. 2, 1896.....	\$8,750.00
8247	J. H. Sherman.....	Right of way for overflow of surface water.....	425.00
8248	A. L. Washburn.....	Electric light office.....	35.00
8249	Fielding & Shepley.....	Relaying pavement.....	221.89
8250	H. M. Smyth Printing Co.....	Order books.....	4.50
8251	Jno. Martin Lumber Co.....	Lumber.....	16.16
8252	So. Park Foundry and Mach. Co.....	Est. No. 6, valves.....	360.00
8253	So. Park Foundry and Mach. Co.....	Est. No. 3, fire hydrants.....	158.75
8254	Jas. Shiely.....	Est. No. 3 and final, drayage.....	108.11
8255	National Meter Co.....	Est. No. 9, meters.....	700.00
8256	Dennis Long & Co.....	Est. No. 4, iron pipe for city.....	740.17
8257	Dennis Long & Co.....	Est. No. 3, pipe for Centerville.....	224.44
8258	C. Newman.....	Lunches for engineers, commissioners.....	31.15
8259	Theophile Vandlac.....	Est. No. 13, hauling coal, Vadnais Lake.....	22.19
8260	Hennessey & Cox.....	Repairing paving.....	60.09
8261	Pioneer Press Co.....	Printing.....	60.75
8262	Ransome Subway Co.....	Est. No. 5, conduit to Otter Lake.....	1,000.00
8263	C. L. Horst, city treasurer.....	Payroll for September.....	4,233.18
8264	Est. of Jas. Gillfillan.....	Rent of storage lot.....	25.00
8265	Robinson & Cary Co.....	Tools.....	29.32
8266	The Western Supply Co.....	Jute packing.....	26.61
8267	Chas. Friend & Son.....	Leather and harness fittings.....	4.45
8268	Mitsch Wagon and Carriage Co.....	Tools.....	3.34
8269	Crane-Ordway Co.....	Pipe and pipe fittings.....	33.35
8270	Dan Cashill & Co.....	Horseshoeing.....	6.00
8271	Brown, Treacy & Co.....	Job printing.....	8.50
8272	Merrill, Odgen & Greer.....	Lamp fixtures.....	.60
8273	Fairbanks, Morse & Co.....	1 8-Inch $\frac{1}{4}$ bend.....	2.81
8274	H. C. Boyeson.....	Stationery.....	21.25
8275	Cornplanter Oil Co.....	Oil.....	11.05
8276	D. L. Bell.....	Utica cement.....	5.60
8277	Farwell, Ozmun, Kirk & Co.....	Powder, fuse and tools.....	20.30
8278	The Globe Co.....	Advertising.....	6.46
8279	Jno. Martin Lumber Co.....	Lumber.....	65.82
8280	Pioneer Press Co.....	Advertising.....	18.95
8281	Wedelstaedt & Carmen.....	Job printing.....	1.50
8282	P. N. Lindquist.....	Horseshoeing.....	2.00
8283	J. G. Duggan.....	Blacksmithing.....	13.80
8284	N. W. Fuel Co.....	Coal.....	83.53
8285	C. E. Green.....	Abstracts, recording papers.....	4.00
8286	So. Park Foundry and Mach. Co.....	Est. No. 6, valves.....	96.00
8287	So. Park Foundry and Mach. Co.....	Repacking hydrant valves.....	13.80
8288	St. Paul Foundry Co.....	Est. No. 3, specials for Centerville.....	141.26
8289	St. Paul Foundry Co.....	Special castings, smoke stack.....	8.76
8290	Union Brass and Metal Mfg Co.....	Est. No. 3, brass goods.....	75.00
8291	Union Brass and Metal Mfg Co.....	Brass goods.....	3.00
8292	Pioneer Fuel Co.....	Est. No. 14, fuel.....	226.85
8293	P. H. Kelly Mercantile Co.....	Est. No. 8, lubricating oils.....	32.22
8294	P. H. Kelly Mercantile Co.....	1 bbl. W. W. oil, matches, etc.....	6.40
8295	Allen & Co.....	Livery.....	25.00
8296	Mable & Sutmar.....	Wagon repairs.....	10.30
8297	Fire and Water.....	One year subscription.....	3.00
8298	Geo. J. Mitsch & Co.....	Supplies.....	6.65
8299	A. Decker & Co.....	Tools.....	4.55
8300	Dispatch Printing Co.....	Advertising.....	2.00
8301	The N. W. Telephone Ex. Co.....	Rent of telephones.....	7.25
8302	Board of Fire Commissioners.....	200 feet condemned hose.....	40.00

## LIST OF VOUCHERS—Continued.

OCTOBER, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8303	Hobart & Willis.....	One 4-inch Ell.....	1.80
8304	A. H. Fitch, clerk of district court	Fees right of way matter.....	25.00
8305	St. Paul Plow Co.....	Est. No. 4, specials.....	348.88
8306	Fielding & Shepley.....	Relaying pavement.....	9.89
8307	D. Cardinal.....	Hay.....	25.62
8308	Jno. Caulfield, secretary.....	Cash advanced per vouchers.....	29.87
8309	Patrick Doherty.....	Est. No. 4, pipelaying.....	511.51
8310	Jos. M. Forcier.....	Teaming to Baldwin Lake.....	12.00
8311	J. F. McCarthy.....	Est. No. 5, wells at Centerville.....	2,300.73
8312	Hennessey & Cox.....	Est. No. 3, engine house, Centerville.....	1,955.00
8313	Hennessey & Cox.....	Est. No. 3, wooden conduit, Centerville.....	3,859.34
8314	Nicholas Feyen.....	Est. No. 3, pipelaying, Centerville.....	765.00
8315	Fairbanks, Morse & Co.....	Est. No. 2, laying 36-in. main to reservoir.....	4,380.46
8316	C. L. Horst, city treasurer.....	For investment in sinking fund.....	15,000.00
8317	Great Northern Railroad Co.....	Repairing track over Rice street main.....	5.03
8318	Nicols & Dean.....	300 feet $\frac{3}{4}$ round iron, Centerville.....	8.70
8319	N. W. Stamp Works.....	Three inspectors' badges.....	2.25
8320	Wedelstaedt & Carmen.....	Printing.....	5.75
8321	J. M. Molliter.....	Drayage to Baldwin Lake.....	1.00
8322	R. N. Cardozo.....	Stove, etc., engineers at Centerville.....	4.25
8323	Jno. Rogers, Jr., & Bro.....	Insuring boilers, pump house.....	150.00
8324	Minnesota Engine Works.....	3 moulds for dash pots, Vadnais.....	2.93
8325	So. Park Foundry and Mach. Co.....	30 5-inch hydrant stuff boxes.....	25.20
8326	St. Paul Foundry Co.....	Channel iron for boilers, Centerville.....	52.64
8327	Jos. Garcean.....	Blacksmithing.....	2.35
8328	Thos. Brannan Lumber Co.....	Est. No. 2, lumber, Otter Lake.....	436.68
8329	The Western Supply Co.....	Est. No. 1, lead pipe.....	329.42
8330	N. W. Shot and Lead Works.....	Pig lead and lead pipe.....	304.57
8331	St. Paul Lime and Cement Co.....	Sewer pipe, brick and cement.....	107.71
8332	N. Feyen.....	Est. No. 4 and final, connecting wells, Centerville.....	851.76
8333	J. F. McCarthy.....	Est. No. 6, final, sinking wells, Centerville.....	54.59
8334	Thomson Meter Co.....	Meter repairs.....	6.05
8335	N. Hendy.....	Damages.....	50.00
8336	N. Feyen.....	Est. No. 1, final, moving boilers.....	74.00
Total.....			\$49,925.74



## LIST OF VOUCHERS--Continued.

NOVEMBER, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
8337	C. L. Horst, city treasurer.....	Pay roll for October.....	\$4,732.21
8338	C. L. Horst, city treasurer.....	Interest due Dec. 11, 1896.....	7,000.00
8339	Menominee Pressed Brick Co.....	Sewer brick.....	195.00
8340	Jos. Peltier.....	One cord oak.....	2.50
8341	Napoleon Sorigny.....	Timber for intake, Centerville.....	27.32
8342	Fairbanks, Morse & Co.....	Two lead pouring clamps.....	6.50
8343	St. Paul Co-Operative Painting Co.	Papering and painting third floor office.....	38.00
8344	Jno. Gorman.....	Lamp cord and tubing.....	.80
8345	Jacob Brunner.....	Three revolve lamp shades.....	6.50
8346	Nicols & Dean.....	Iron and blacksmith coal.....	15.09
8347	Hennessey & Cox.....	Repairing asphalt.....	24.27
8348	Pioneer Press Co.....	Advertising.....	.63
8349	So. Park Foundry and Mach. Co.....	Repairing valves.....	20.88
8350	N. W. Telephone Ex. Co.....	Labor, repairing private line.....	10.25
8351	Tierney & Co.....	Feed.....	.75
8352	Daily Globe.....	Advertising.....	.50
8353	Jno. Martin Lumber Co.....	Lumber.....	35.16
8354	Chas. Friend & Son.....	Harness fittings.....	1.95
8355	D. L. Bell.....	Brick cement, etc.....	82.75
8356	Wm. Manteuffel.....	One case, with drawers.....	6.00
8357	J. G. Duggan.....	Sharpening tools.....	5.60
8358	Dan'l Cashill & Co.....	Horseshoeing.....	6.00
8359	Wedelstaedt & Carmen.....	500 envelopes.....	1.50
8360	Crane-Ordway Co.....	Pipe and pipe fittings.....	28.83
8361	Robinson & Cary Co.....	Tools, waste, etc.....	53.25
8362	The Western Supply Co.....	Packing pipe fittings.....	14.52
8363	Farwell, Ozmun, Kirk & Co.....	Powder, nails and tools.....	42.05
8364	P. H. Kelly Mercantile Co.....	One box candles.....	4.80
8365	P. H. Kelly Mercantile Co.....	Est. No. 9, lubricating oils.....	31.01
8366	St. Paul Foundry Co.....	Iron work, Centerville.....	22.87
8367	Adam Decker & Co.....	Tools.....	3.25
8368	Geo. J. Mitsch & Co.....	Supplies.....	7.91
8369	Dispatch Printing Co.....	Advertising.....	1.05
8370	H. C. Boyeson & Co.....	Stationery.....	12.15
8371	T. L. Blood & Co.....	Paint.....	.55
8372	Brown, Treacy & Co.....	Blank books.....	14.45
8373	Cornplanter Oil Co.....	Oil and gasoline.....	6.60
8374	Pioneer Fuel Co.....	Est. No. 15 and final, 1895 contract.....	11.72
8375	Pioneer Fuel Co.....	Est. No. 1, 1896.....	187.03
8376	Theo. Vandiac.....	Est. No. 13, hauling coal, Vadnais.....	11.65
8377	Northwestern Fuel Co.....	Est. No. 1, wood and coal contract 1896-7.....	302.55
8378	Jno. Caulfield, secretary.....	Cash advanced as per receipts.....	42.85
8379	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	3.07
8380	P. N. Lindquist.....	Horseshoeing.....	2.00
8381	Allen & Co.....	Livery.....	20.00
8382	St. Paul Sidewalk Co.....	Hex. cement tiles.....	2.15
8383	Hennessey & Cox.....	Est. No. 4, pumping station, Centerville.....	637.50
8384	Hennessey & Cox.....	Est. No. 4, wooden conduit.....	7,059.51
8385	N. Feyen.....	Est. No. 4, dray to Centerville.....	200.09
8386	Patrick Doherty.....	Est. No. 5, final, pipe laying, city.....	331.94
8387	Fairbanks, Morse & Co.....	Est. No. 3, laying force main.....	1,610.12
8388	Thos. Brennan Lumber Co.....	Est. No. 3, lumber.....	598.82
8389	A. and W. McGuiggan.....	Alterations, second floor office.....	108.00
8390	Est. of Jas. Gilfillan.....	Rent of storage lot.....	25.00

## LIST OF VOUCHERS—Continued.

NOVEMBER, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8391	The E. P. Allis Co.....	Est. No. 1, pumps for Center- ville .....	10,350.00
8392	Herman Thiede.....	Lumber .....	73.14
8393	N. W. Shot and Lead Co.....	Lead pipe.....	18.03
8394	Jamieson-Hevener Co.....	Oats .....	40.97
8395	So. Park Foundry and Mach. Co.	Sleeves .....	144.91
8396	Warren-Scharf Asphalt Co.....	Relaying pavement.....	46.24
8397	Wedelstaedt & Carmen.....	Deposit slips.....	7.00
8398	The People's Ice Co.....	Ice for office use.....	11.00
8399	Jas. Lamotte.....	Expressage for water samples	3.00
8400	Pioneer Press Co.....	Blank books, etc.....	30.45
8401	Wyckoff, S. & Benedict.....	Typewriter cabinet supplies..	174.40
8402	Tierney & Co.....	Hay .....	11.01
8403	Jno. Gorman.....	Electric supplies.....	4.50
8404	Hersey Mfg. Co.....	Meter fixtures.....	69.60
8405	Sherwood-Sutherland Co.....	Rent of pile driver, Centerville	15.00
8406	Board of Fire Comm'rs.....	Telegraph poles, reservoir...	17.50
8407	St. Paul Timber and Supply Co...	Piling for Centerville.....	135.15
8408	Thos. Brennan Lumber Co.....	Est. No. 4, lumber.....	319.06
8409	Jno. Fitzgerald, Supt.....	One dozen parlor brooms.....	2.20
8410	Fielding & Shepley.....	Relaying pavement.....	14.73
8411	C. Peterson.....	Repairing clocks, pump house	2.50
8412	Jno. Caulfield, Sec'y.....	Cash advanced, as per voucher	86.80
8413	Thos. Langevin.....	Dump ground excavating Cen- terville .....	75.00
8414	Jno. Fitzgerald, Supt.....	Brooms for conduit.....	4.40
8415	St. Paul Foundry Co.....	Channel iron, etc.....	29.00
8416	St. Paul Foundry Co.....	Est. No. 4, specials.....	1,014.02
8417	Hennessy & Cox.....	Est. No. 5, conduit Centerville	2,249.10
	Total .....		\$38,575.26

## LIST OF VOUCHERS—Continued.

DECEMBER, 1896.

No. of Voucher.	NAME.	CLAIM.	Amount.
8418	C. L. Horst, city treasurer.....	Pay roll for November.....	\$4,078.14
8419	C. L. Horst, city treasurer.....	Chgs. for paying water board coupons, 1892 to 1896 inclusive.....	1,427.50
8420	Griggs Bros.....	Feed.....	4.65
8421	St. Paul Lime and Cement Co.....	Sewer pipe.....	4.50
8422	Flelding & Shepley.....	Relaying pavement.....	31.30
8423	Jos. A. Peltier.....	One cord wood, pump house, Centerville.....	3.00
8424	Jos. N. Forcier.....	Oil for pump house, Centerville.....	1.30
8425	Jos. Garceau.....	Blacksmithing.....	15.35
8426	Peter Dupre.....	Sand for pump house for boilers.....	16.00
8427	H. C. Boyeson Co.....	Stationery.....	14.85
8428	Nicols & Dean.....	Iron bolts and washers.....	14.11
8429	Pioneer Press Co.....	Printing and lithographing.....	13.00
8430	Thos. Brennan Lumber Co.....	Lumber.....	2.57
8431	Est. of Jas. Gilfillan.....	Rent of storage lot.....	25.00
8432	J. G. Duggan.....	Repairing tools.....	6.85
8433	D. L. Bell.....	Fire brick, lime and cement.....	56.40
8434	P. H. Kelly Mer. Co.....	Est. No. 10, lubricating oils.....	7.90
8435	P. H. Kelly Mer. Co.....	Oils.....	5.20
8436	Robinson & Cary Co.....	Oil.....	1.25
8437	T. L. Blood & Co.....	Asphaltum, etc.....	1.80
8438	Jno. Martin Lumber Co.....	Lumber.....	8.00
8439	Ogden, Merrill & Greer.....	Cuspidores, lantern fix., etc.....	4.24
8440	Farwell, Ozmun, Kirk & Co.....	Powder, fuse and nails.....	13.65
8441	Brown, Treacy & Co.....	Bottle ink.....	.25
8442	C. W. Hackett Hdw. Co.....	Staples.....	1.06
8443	Cornplanter Oil Co.....	Oil and gasoline.....	6.05
8444	The Western Supply Co.....	Valves, pipe and pipe fittings.....	30.29
8445	The Crane & Ordway Co.....	Radiators and pipe fittings.....	117.75
8446	Allen & Co.....	Livery.....	9.50
8447	Wyckoff, S. & Benedict.....	Typewriter supplies.....	3.78
8448	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	4.74
8449	Geo. J. Mitsch & Co.....	Supplies.....	7.15
8450	Daniel Cashill & Co.....	Horseshoeing.....	11.25
8451	Jno. Kenny.....	Boiler front.....	50.00
8452	N. W. Telephone Ex. Co.....	Telephone.....	7.25
8453	P. N. Lindquist.....	Horseshoeing.....	4.00
8454	A. P. Smith Mfg. Co.....	Repairing tapping machine.....	7.50
8455	Fairbanks, Morse & Co.....	Refitting pouring clamp.....	.75
8456	N. W. Fuel Co.....	Est. No. 2, fuel.....	1,073.37
8457	P. H. Kelly Mer. Co.....	Case of matches.....	1.20
8458	Ninnis & Meyer.....	Repairing wires.....	1.45
8459	M. J. O'Neill.....	Repairing bracket.....	.25
8460	Martin Flest.....	Lunch for men cleaning conduit.....	3.50
8461	Nicholas Feyen.....	Est. No. 5, final, connecting wells, Centerville.....	20.00
8462	Nicholas Feyen.....	Est. No. 1, grading over conduit.....	951.15
8463	Jno. Kenny.....	Est. No. 1, boiler, McCarron's lake.....	986.00
8464	National Meter Co.....	Est. No. 10, meters.....	668.80
8465	Union Brass and Metal Co.....	Est. No. 4.....	7.20
8466	Wedelstaedt & Carmen.....	Printing.....	8.00
8467	St. Paul Fire & Marine Ins. Co.....	Insurance.....	21.80
8468	N. Feyen.....	Drayage.....	29.10
8469	Mannheimer Bros.....	One rug for office.....	24.00



## LIST OF VOUCHERS—Continued.

DECEMBER, 1896—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8470	A. and W. McGuiggan.....	Carpenter work.....	8.15
8471	Pioneer Press Co.....	Printing .....	8.00
8472	Geo. J. Grant.....	Rent of portable engine.....	34.00
8473	So. Park Foundry and Mach. Co.	Cast sleeves .....	12.48
8474	Mahle & Sutmar.....	Blacksmithing .....	25.00
8475	Jno. Caulfield, Sec'y.....	Cash advanced by voucher...	42.64
8476	N. Feyen.....	Est. No. 2, grading at Center- ville .....	143.85
8477	Hennessy & Cox.....	Est. No. 6, conduit, Centerville	6,307.19
8478	Hennessy & Cox.....	Est. No. 5, engine at Center- ville .....	1,573.50
8479	St. Paul Foundry Co.....	Special castings .....	977.98
Total .....			\$18,947.07
Grand total.....			\$385,468.79



# SUPERINTENDENT'S REPORT.

ST. PAUL, MINN., Jan. 1, 1897.

To the Board of Water Commissioners,

GENTLEMEN: I herewith submit my first annual report of the work done by and under your direction for the year 1896. The work done covers a period of thirteen months, four months of which the work was done under the direction of my predecessor, the odd period of time being caused by the fiscal year of the board having been changed from December 1st to December 31st, so that in the future the annual report of this department will date from January 1st of each year.

The tables herewith submitted will give everything in detail, as to the location and character of the work done, a summary of which is as follows:

## EXTENSION ACCOUNT FOR 1896.

	Lineal Feet.
Water pipe laid on high service.....	15,817
Water pipe laid on low service.....	1,916
Water pipe laid on high service, West Side.....	1,292
Total .....	19,025
Or 3.6032 miles.	
Water pipe relaid (feet).....	1,508
Building wooden flume in open trench, at various points where the sides of ditch kept falling in, due to the action of frost, from Pleasant lake to north end of Wilkinson (lineal feet).....	1,122
Repiling for foundation of 20-inch force main at crossing of Rice street for a distance of (lineal feet).....	330
Fire hydrants placed during the year.....	32
Fire hydrants changed from single to double steamer.....	3
Valves placed during the year.....	36
Service pipe connections.....	540
New meters placed .....	437

## FIRE HYDRANTS.

Thirty-two fire hydrants have been placed this year, eleven of which were double steamer, making a total of twenty-two hundred and thirty-two (2,232) of both kinds now in service.

## REPAIRS ON HYDRANTS.

There have been fifty-five leaks and eleven breaks during the year. The nature and cause of repairs, enumerated separately, is as follows:

There have been thirty-four valves cut by stones, thirteen defective seat washers, one valve nut loose, three ring valves loose, one brass ring valve broken, two valve rods broken, one ring valve knee broken, eight stuffing boxes broken, two casings broken, one nozzle broken.

The location of three hydrants was changed on account of curb line having been removed, and I would recommend that in the future whenever the curb line of a street is changed that the hydrants be placed to conform with it.

## SPRINKLING STAND PIPES.

There have been five new sprinkling stand pipes placed and one whose location has been changed, making a total number now placed of two hundred and eighty-three (283). The repairs on the same were as follows:

Twenty-three leaks in valve rods, one broken by runaway, two bottom ells worn out, fourteen stand pipes cracked by frost, two reset (caused by change of curb line), thirty valves worn out, one hundred and eighteen (118) hose repaired. The latter item in a great many cases required new hose.

## REPAIRS ON MAINS.

There have been eight leaks on mains, three of which were caused by the jarring of passing trains at railroad crossings. The others were caused by defective pipe and pipe joints.

## NEW VALVES PLACED AND VALVES REPAIRED.

There have been thirty-six new valves placed, making a total of two thousand, fifty-nine (2,059) now in service.

Repairs on valves were as follows: Forty-two leaks in stuffing boxes, one rust in pinion wheel, one leak in flange joint, one defective spindle, seven by rust in gland; making a total of fifty-two repairs.

The repairs were done on the following valves:

Galvin valve .....	29
R. D. Wood valve.....	11
Boston Machine Co.....	8
Ludlow valve .....	4
Total .....	52

The cost of general maintenance for hydrants, valves, etc., during the year, as compared with 1895, shows a reduction of \$2,697.42, as follows:

Hydrants, for labor.....	\$1,021.13
Hydrants, for material.....	27.06
Valves, for labor.....	418.64
Valves, for material.....	249.48
Mains, for labor.....	364.33
Tool and tool repairs' account.....	616.78
Total .....	\$2,697.42

The reduction in the last item is due principally to the "Contract System," adopted by your honorable board in carrying out the operations of the department, and for the remaining items, it is due to the labor force being reduced down to the minimum, without impairing the efficiency of the service for that part of the work.

#### SERVICE PIPES.

There have been five hundred and forty (540) service pipes put in this year, one hundred and fifty-six (156) of which were put in on low service and three hundred and eighty-four (384) on high service, sixty-one of which were put in for vacant property in advance of paving, making the total number of services in the city up to date fourteen thousand, seven hundred and eighty-two (14,782).

There have been eighty leaks repaired, the cause of which was as follows: Twenty-three defective joints, twenty-four defective stops, fifteen defective pipes, two defective valves for fountains, six sewer trenches, one area wall settlement, four trench settlements, four drill holes, and one by electric pole being placed over pipe.

There was not a frozen pipe reported to the department during the year except in two instances, and that was where the pipe had been exposed by a sewer trench excavation. This is rather an unusual occurrence, in view of the fact that during the years 1893, 1894, and 1895 there had been reported a total of four hundred and fifty-four (454) frozen pipes. This can be attributed mostly to the fact of a period of severe cold weather coming before there had been any snow.

The following table shows the condition of the temperature, during the winter months, for the years 1893, 1894, and 1895 and up to Jan. 1, 1897. Period of winter months for which a comparison is made being for the months of November, December, January, February, and March of each year, except for 1896, which is only taken up to Jan. 1, 1897:

YEAR.	Average Maximum Tempera- ture.	Average Minimum Tempera- ture.	Average Mean Tempera- ture.	Minimum Tempera- ture.	No. of Serv- ices Frozen.
1893.....	28.5	11.9	20.5	.26	259
1894.....	28.2	11.5	19.9	.25	23
1895.....	30.9	14.3	22.6	.26	172
1896.....	29.5	15.6	22.6	.18	0



GENERAL MAINTENANCE AND EXTENSION ACCOUNT, FOR WORK  
DONE AND UNDER WAY OUTSIDE OF THE CITY LIMITS IN RAMSEY  
AND ANOKA COUNTIES.

Vadnais lake conduit has been flushed out three times the past year, and when last cleaned (which was in the month of November) it was found to be in a very favorable condition.

This condition of the conduit I attribute to the action of the artesian well water, pumped in at Vadnais lake, which has had the effect of reducing the temperature of the water in the conduit, thereby destroying to a very large extent the organic vegetable matter that would otherwise germinate and grow in the conduit, as ordinarily the temperature of the water when all taken direct from the lake increases about ten degrees during the summer months, from the time it enters the conduit at Vadnais lake until it reaches the terminal chamber at the McCarron lake station.

During the year the Vadnais lake pump house (also, the gate house that is situated south of intake chamber) was raised, and stone foundation piers were put in and pump house building painted. The grounds around the dwelling were surfaced with black earth, grass seed sown, and fenced, incurring an expense of about \$400.

The Baldwin lake canal discharging into Charles lake and the one from Pleasant lake to the north end of Wilkinson lake were cleaned out twice, and repairs done on woodwork where required. The Baldwin lake canal where curbed up with timber is fast decaying, and within the next two years it will be necessary to retimber it, if it is the desire of the board to keep it open. That part of the Centerville extension which consists of the laying of a thirty-six inch castiron pipe out into Centerville lake, for an intake, is now under way, and about 500 feet has been laid, leaving 400 feet yet to be put in. The city engineer, under whose direction the latter piece of work is being done, will report to you in detail all matters relating to this extension. I respectfully offer for your consideration the following suggestions in relation to matters pertaining to the department:

First—To omit in the annual report of the department all detail tables about sprinkling hydrants, fire hydrants, location and size of all valves. But the number put in each year, with a summary of the total, could be mentioned briefly, which would give in the aggregate what the water board has done each year, and what works and property it has charge and supervision of.

If, in your opinion, you thought it not advisable to omit these tables entirely, then for the purpose of having them in printed form, I would suggest that they be printed every third year, as the probable future extensions of the department for that period would be sufficient to warrant the expense of printing.

The annual report of 1895 contains about 147 pages, sixty-four of which are filled with these detail tables which are repeated year after year.



I am informed by the secretary that the average cost per copy of the annual report for the past three years was about one dollar each. Therefore, you can readily see what amount would be saved by eliminating them from the report.

Second—The placing of some employees on the pay roll on monthly wages instead of by the day.

Third—In view of the Centerville extension being practically completed, I would suggest that the telephone service should be put in the coming season, and the contract for furnishing poles be let as soon as practicable so that the service be completed by June 1st. And from the current price of the material and labor required to furnish and erect this line, I have made an approximate estimate of cost, and find that it would be about \$110 per mile. This includes everything except the telephone instruments. No doubt competition, if proposals were asked, would reduce this estimate.

Fourth—I would recommend the laying of another main across the river to supply the Sixth ward. This ward has a population of about 12,000 people who are depending on water from the sixteen-inch main, and in the event of a break the entire ward would be without fire protection, besides which domestic service would be discommoded during the time of making the repair. In the event that you should decide to lay an additional pipe across the river, the most propitious time to do this work would be this winter.

In conclusion, I wish to express my thanks for the courtesy and assistance tendered me in the performance of my duty by your honorable board.

Respectfully submitted,

A. R. STARKEY,  
Superintendent.

## PIPE LAID IN HIGH SERVICE DURING THE YEAR 1896.

DATE.	STREET.	FROM STREET TO STREET.	4-in.	6-in.	12-in.	20-in.	36-in.
July 20....	Dawson....	Forest to Cypress.....		715			
May 2....	Phalen ave..	Stillwater, 48 feet east....			48		
June 23....	Floral.....	Oakland, 38 feet north....	38				
June 22....	Dayton.....	West Third to Summit....	192				
July 15....	Mulberry....	West Sixth, 70 feet west..	70				
July 15....	W. Sixth....	College to Summit.....		525			
Aug. 1....	Sims.....	Earl to Cypress.....		617			
Aug. 8....	Geranium....	Burr to Jessie.....		616			
Aug. 14....	Westminster	Cayuga to Lookout Place..		615			
Aug. 18....	Agate.....	Poplar to York.....		378			
Aug. 19....	Agate.....	Case to Jenks.....		320			
Aug. 26....	Park ave....	Cook to Lawson.....		335			
Oct. 1....	Marshall....	Snelling to Wheeler ave..			2,001.7		
Oct. 22....	Grand.....	Fairview to Baldwin.....		771			
Oct. 26....	Jessamine....	Forest to Cypress.....		644			
Nov. 4....	Lawson....	Cortland to Agate.....		520			
July 29....	Sixth.....	Summit to 12 feet west....		12			
McCarron La	ke Road Force	main.....				46	
McCarron La	ke Road Force	main for connecting with					7,553
Dale street	main.....						
Total .....			300	6,068	2,049.7	46	7,353

Total 4-inch pipe..... 300

Total 6-inch pipe..... 6,068

Total 12-inch pipe..... 2,049.7

Total 20-inch pipe..... 46

Total 36-inch pipe..... 7,353

Total in high service..... 15,816.7, or 2.9959 miles.

## PIPE LAID IN LOW SERVICE DURING THE YEAR 1896.

DATE.	STREET.	FROM STREET TO STREET.	4-in.	6 in.	8-in.
Dec. 14, 1895..	Sixth .....	St. Peter East.....			195
Jan. 25, 1896..	Cedar .....	Second to Third.....			176
July 17, 1896..	Duke .....	Seventh to St. Clair.....		835.6	
Sept. 5, 1896..	Oneida .....	Jefferson to Grace.....		598	
Aug. 31, 1896..	Ontario .....	Washington to a point 37 feet south of Hill street..	112		
Total .....			112	1,433.6	371

Total 4-inch pipe..... 112

Total 6-inch pipe..... 1,433.6

Total 8-inch pipe..... 371

Total .....

1,916.6 on low service.

## PIPE LAID ON WEST SIDE HIGH SERVICE DURING THE YEAR 1896.

DATE.	STREET.	FROM STREET TO STREET.	6-in.	12-in.
July 23.....	Robie.....	Bidwell to Bellows.....	522	.....
July 23.....	Bidwell.....	George to Robie.....	.....	314
July 28.....	Hall avenue.....	Elizabeth to Louisa.....	311	.....
July 29.....	Alice.....	Ohio to the park.....	141	.....
July 29.....	Ohio.....	Alice street East.....	4½	.....
Total.....			978½	314

Total 6-inch pipe..... 978½ feet.

Total 12-inch pipe..... 314

Total ..... 1,292½

## PIPE RELAID ON LOW SERVICE DURING THE YEAR 1896.

DATE.	STREET.	FROM STREET TO STREET.	6-in.	8-in.	12-in.
Dec. 7, 1895..	Fifth ...	Cedar to Wabasha, 4-inch, relaid with .....	.....	.....	249
Dec. 14, 1895..	Sixth ...	Wabasha to St. Peter, 4-inch, relaid with .....	.....	161	.....
Dec. 21, 1895..	Fifth ...	St. Peter to Washington, 4-inch, relaid with .....	506	.....	.....
July 1, 1896..	Sixth ...	Wacouta to Broadway, 4-inch, relaid with .....	.....	550	.....
July 1, 1896..	Sixth ...	Broadway to Pine, 4-inch, relaid with .....	.....	42	.....
Totals .....			506	753	249

Total relaid..... 1,508 feet.

## SUMMARY OF WATER PIPE LAID IN THE CITY OF ST. PAUL, JAN. 1, 1897.

	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.	Total Feet.	Total Miles.
High service....	37,423	542,479	.....	130,499	87,188	36,234	15,495	9,234	8,913	857,455	162.3967
Low service....	41,164	197,245	3,411	47,997	38,078	8,302	8,765	16,436	18	361,416	68.4500
West Side high service.....	.....	23,030	.....	7,219	3,950	.....	.....	.....	.....	34,199	6.4771
Total .....	78,587	762,754	3,411	175,715	129,216	44,526	24,250	25,670	8,931	1,253,070	237.3238

Total 4-inch pipe..... 78,587

Total 6-inch pipe..... 762,754

Total 8-inch pipe..... 3,411

Total 12-inch pipe..... 175,715

Total 16-inch pipe..... 129,216

Total 20-inch pipe..... 44,526

Total 24-inch pipe..... 24,250

Total 30-inch pipe..... 25,670

Total 36-inch pipe..... 8,931

Grand total..... 1,253,070 feet, or 237.3238 miles.



## HYDRANTS PLACED IN 1896.

No.	LOCATION.	Service.	Single or Double Steamer.	Size of Pipe.	Pressure on Hydrants.
2201	Wabasha, bet. Fifth and Sixth, w. side...	Low.....	Double....	6	.....
2202	Sixth, bet. Wabasha and St. Peter, s. side	Low.....	Double....	8	.....
2203	Fifth and Market, 5, e. cor.....	Low.....	Double....	6	.....
2204	Cedar and Second, 22, w. cor.....	Low.....	Double....	8	.....
2205	West Third, 65 ft. s. of Summit, e. side..	High.....	Single....	6	.....
2206	Oakland and Floral, n. w. cor.....	High.....	Single....	4	.....
2207	Summit, 325 ft. e. of Sixth, n. side.....	High.....	Double....	12	.....
2208	Sixth and Summit, s. e. cor.....	High.....	Double....	6	.....
2209	Duke and Grace, n. w. cor.....	Low.....	Single....	6	.....
2210	Duke and St. Clair, s. w. cor.....	Low.....	Single....	6	.....
2211	Robie and Bellows, n. e. cor., West Side..	High.....	Single....	6	.....
2212	Robie and Bidwell, n. w. cor., West Side..	High.....	Single....	6	.....
2213	Louisa and Hall, s. w. cor., West Side....	High.....	Single....	6	.....
2214	Sims and Cypress, n. e. cor.....	High.....	Single....	6	.....
2215	Arcade, 154.5 ft. s. of Wells, e. side.....	High.....	Double....	12	.....
2216	Forest, 180 ft. s. of Wells, e. side.....	High.....	Double....	6	.....
2217	Geranium and Bradley, n. e. cor.....	High.....	Single....	6	.....
2218	Geranium and Burr, n. e. cor.....	High.....	Single....	6	.....
2219	Westminster and Cayuga, n. w. cor.....	High.....	Single....	6	.....
2220	Westminster and York, s. w. cor.....	High.....	Single....	6	.....
2221	Agate and Case, n. w. cor.....	High.....	Single....	6	.....
2222	Bohn's factory, 215 ft. e. of Arcade, 357 ft. s. of Wells.....	Low.....	Double....	16	.....
2223	Bohn's factory, 208 ft. e. of Arcade, 380 ft. s. of Wells.....	Low.....	Double....	16	.....
2224	Bohn's factory, 50 ft. w. of Mendota, 320 ft. s. of Wells.....	Low.....	Double....	16	.....
2225	Marshall and Fry, n. w. cor.....	High.....	Single....	12	.....
2226	Marshall and Pierce, n. w. cor.....	High.....	Single....	12	.....
2227	Marshall and Aldin, n. w. cor.....	High.....	Single....	12	.....
2228	Marshall and Herschel, n. w. cor.....	High.....	Single....	12	.....
2229	Grand and Fairview, n. e. cor.....	High.....	Single....	6	.....
2230	Jessamine and Cypress, n. w. cor.....	High.....	Single....	6	.....
2231	Lawson and Agate, n. w. cor.....	High.....	Single....	6	.....
2232	Onelda and Grace, s. w. cor.....	Low.....	Single....	6	.....

New hydrants placed during the year 1896 on high service..... 19  
 New hydrants placed during the year 1896 on low service..... 10  
 New hydrants placed during the year 1896 on West Side high service..... 3

Total for the year..... 32

DISTRICT.	Double Steamer.	Single Steamer.	Total No. of Hydrants in Each District.
High service.....	11	1,361	1,372
Low service.....	130	639	769
West Side high service.....	..	91	91
Total number double steamers up to date.....	141		
Total number of single steamers.....		2,091	
Total number of hydrants up to date.....			2,232

Hydrants Nos. 205-744 and 1561 were changed from single to double steamers.

The number and location of the following hydrants are placed on private property. They are of the standard make, and can be used in case of fire: Northwestern Cordage Works, 4; W. A. Wood Harvester Works, 11; Northern Pacific shops, 3; Yeerg's Brewery, 1.



## STREET SPRINKLING HYDRANTS PLACED IN 1896.

No.	LOCATION.	Measurement of Valve From Hydrant.
279	Maria and North.....	12 feet.
280	Hall and Winifred.....	11 feet.
281	Thomas and Farrington.....	7 feet.
282	Margaret and Cable.....	29 feet.
283	Mendota and Forest.....	9 feet.

No. 181 has been changed to St. Albans and Fairmount.  
 Number placed this year..... 5  
 Total placed to date..... 283

## VALVES PLACED IN 1896.

STREET.	LOCATION.	4 in.	6 in.	8 in.	12 in.	20 in.	36 in.
Arcade.....	154.5 feet s. of Wells on H.....		1				
College.....	West line of Sixth.....		1				
Dawson.....	East line of Earl.....		1				
Forest.....	180 feet s. of Wells on H.....		1				
Forcemain.....	On McCarron road, E. W. and B. O....		3	2		3	3
Grand.....	East line of Fairview.....		1				
Jessamine.....	East line of Forest.....		1				
Lawson.....	East line of Courtland.....		1				
Marshall.....	West line of Snelling.....				1		
Marshall.....	West line of Aldine.....				1		
Mulberry.....	West line of Sixth.....		1				
Sims.....	West line of Earl.....		1				
Sixth.....	North line of Summit.....		1				
Summit.....	19 feet east of Dayton.....	1					
Westminster.....	South line of York.....		1				
Bohn's Factory.....	In lumber yard on H.....		3				
Cedar.....	South line of Third.....			1			
Duke.....	North line of Seventh.....		1				
Fifth.....	West line of Market.....		1				
Oneida.....	North line of Jefferson.....		1				
Ontario.....	43 feet east of west line of Washington	1					
Rosabel.....	South line of Sixth.....		1				
Robie.....	West line of Bidwell.....		1				
Total .....		2	23	3	2	3	3

Total West Side high service..... 1

Total low service..... 9

Total high service..... 26

Total..... 36

## TOTAL NUMBER OF VALVES ON ALL SYSTEMS, JAN. 1, 1897.

Sizes in Inches.	High Service.	Low Service.	West Side High Service.	Total.
3 inches.....	23	15		38
4 inches.....	110	128		238
6 inches.....	901	442	38	1,381
8 inches.....	2	13	8	23
12 inches.....	136	66		202
16 inches.....	66	35	5	106
20 inches.....	33	10		43
24 inches.....	9	4		13
30 inches.....	4	5		9
36 inches.....	5	1		6
Total .....	1,280	719	51	2,050





## WATER MAINS ON LOW SERVICE.—Continued.

FROM STREET TO STREET.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
300 feet east of Burr.....	337								
Ramsey to Goodrich.....		1002							
Cliff to Duke.....		2817							
Milwaukee Short Line to Richmond.....		1260		1733					
Seventh to Colborne.....		72							
Monroe to Jackson.....	133	1310				1544			
Mississippi to Columbia.....		592							
State to Stryker.....				2025					
Wabasha to Winifred.....		105							
Winifred to Congress.....		305							
Douglas to Lawton.....		1971							
De Soto to Bradley.....		700							
George to Prospect Ter.....		2080							
State to Ethel.....				2432	2242				
State to Charlton.....				5955					
Levee to University.....	40	1223		3179		108			
Erle to Arbor.....		63		1171					
Seventh to Warsaw.....		445							
Minnehaha to Fauquier.....		634							
Third to Williams.....	805	2443							
View to Chatsworth.....		2130							
Fourth to Seventh.....		846							
Crossing State.....		55							
Grove to De Soto.....				150	1915				
Seventh to Drake.....		1445							
Goodrich to Ramsey.....		1146							
Sibley to Jackson.....	340								
Seventh to Grove.....					777	248			
Thirteenth to Minnehaha.....		2209							
Delos to Wood.....		580							
Douglas to Pleasant.....		973							
Ray to Canton.....		814							
Robert to Gorman.....		701							
Wilkin to Douglas.....		1301							
Crossing Mississippi.....		18							
Third to Fourth.....	250								
Payne to Rivoli.....		1707							
Third to Twelfth.....	1484	1428							
Grove to Overton Ave.....		5165						8013	
Grove to Woodward.....	300								
Mississippi to L'Orient.....		330							
Crossing Seventh.....		59							
Seventh to Ninth.....	410								
Oakdale to Brown.....		1847							
Pine to L'Orient.....		698							
Seventh to Eighth.....	325								
Neill to Smith Ave.....	975	5187							
Canada to Temperance.....	761								
Bedford to De Soto.....		851							
St. Clair to C. M. & St. P. Short Line.....		513							
Sixth to Olmsted.....	236	1248							
John to Pine.....		651							
Grace to 36 feet south of Seventh.....		634							
Washington to Spring.....	112								
State to Midway.....		326			350				
Mississippi to terminal chamber.....								8423 18	
Bradley to De Soto.....	472								
Seventh to Olmsted.....	1275	965							
West of South Robert.....		18							
Sixth to Goodrich.....		4884							
John to Broadway.....		825							
Beaumont to Omaha Ry.....		1092							
Mississippi to Columbia.....		691							
Beaumont to Minnehaha.....		471							
Oakdale to Woodbury.....		1395							
Seventh to Pleasant.....		1352			307				
Webster to Milton.....		757		2818					
Seventh and Goodrich.....		90							

## WATER MAINS ON LOW SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Robert.....	Elizabeth to Central.....		8881							
Reaney.....	St. Paul & Duluth R. R. to Edgerton.....		905							
Rosabel.....	Union Depot grounds to Seventh.....		1598							
Robie.....	State to Andrew.....		2341							
St. Clair.....	Cliff to Colborne.....		985	112						
St. Peter.....	Third to College.....		2866							
Seventh.....	Duluth Railroad to Tus- carora.....	350	1000		470	15656	1508			
Second.....	East of Robert.....		18							
Sherman.....	Bluff to Pleasant.....		1937							
Sibley.....	Levee to Norris.....	1638	1450							
Sixth.....	Kittson to Pleasant.....	1896	2044	3235						
Smith St.....	College to McBoal.....		1074							
Smith Ave.....	John to Pine.....		3924							
Somerset.....	Sibley to Wacouta.....		669							
Spruce.....	Mississippi river to West Side pump house.....	393				7704				
Summit Av.....	Robert to Cedar.....		859							
Stryker.....	George to Prospect Ter.....		2106							
Stewart.....	Tuscarora to Bay.....		909							
Temprance.....	Eighth to Thirteenth.....	1569								
Tenth.....	Locust to College.....	1765	2123				1390			
Third.....	Pleasant to west end of Third St. bridge.....		847		6648					
Thirteenth.....	Pine to Jackson.....		2075							
Thompson.....	Ramsey to Pleasant.....		545							
Twelfth.....	Pine to Cedar.....	290					1274			
Toronto.....	Seventh to Jefferson.....		692							
Tennessee.....	Crossing State.....		51							
Tuscarora.....	Stewart to Milton.....		2624							
Van Slyke Court.....	Broadway to Olive.....	557								
Von M'dn.....	Dousman to Western.....		897							
View.....	Seventh to Palace.....		2081							
Wacouta.....	Union Depot grounds to Spruce.....	783	118		1736					
Walnut.....	100 feet south of I. P. to Pleasant.....	2420								
Warsaw.....	Audubon to Palace.....		1030							
Washingt'n.....	Chestnut to Seventh.....	1047			1236					
Waverly Pl.....	Lafayette to John.....		411							
Webster.....	Clay to Seventh.....		316							
Western Av.....	Milwaukee Ry. to Pleas- ant.....		2550							
Westminst'r.....	Waverly place to N. P. Ry.....		1022							
Willius.....	Fifth to Seventh.....	550								
Wilkin.....	Milwaukee Ry. to Sher- man.....		1215							
Winifred.....	Andrew to 100 feet west of Bellows.....		5540							
Woodward.....	Bradley to John.....	683								
Wabasha.....	Goff to Summit.....		6965							
Watson.....	View to Chatsworth.....		2133							



## WATER MAINS ON LOW SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Winslow....	Isabel to Prospect Ter....	.....	745	.....	.....	.....	.....	.....	.....	.....
Yankee.....	Seventh to Dousman.....	678	.....	.....	.....	.....	.....	.....	.....	.....
Main old line.....	Fauquier to Lake Phalen.....	.....	.....	.....	.....	6000	.....	7024	.....	.....
	Total .....	41164	197245	3411	47997	38078	8302	8765	16436	18

	Feet.
Total 4-inch pipe.....	41,164
Total 6-inch pipe.....	197,245
Total 8-inch pipe.....	3,411
Total 12-inch pipe.....	47,997
Total 16-inch pipe.....	38,078
Total 20-inch pipe.....	8,302
Total 24-inch pipe.....	8,765
Total 30-inch pipe.....	16,436
Total 36-inch pipe.....	18

Total ..... 361,416 feet, or 68.45 miles.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
 HIGH SERVICE TO JAN. 1, 1897.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Arlington...	Greenbrier to Payne.....	650							
Arundel...	Summit to Lafond.....	2553							
Ashland...	Western to Oxford.....		7203						
Aurora...	Robert to Chatsworth.....		7814						
Arcade...	Third to Rose.....		1070	5382					
Astoria...	St. Anth'y to Milwaukee.....		275						
Argyle...	Front to Van Slyke.....	370	831						
Albemarle...	Atwater to Front.....	1293							
Arch...	100 feet west of Columbia to Jackson.....		1725						
Atlantic...	Fauquier to Stillwater.....		1785						
Atwater...	Rice to Sylvan.....		1142						
Agate...	Cortland to Jenks.....		2437						
Avon...	Dayton to Martin.....	1381							
Bates...	Murray to Hastings.....		376	3035					
Beech...	Seventh to Duluth.....		3738						
Blair...	Western to Fairview.....		4510						
Broadway...	Thirteenth to Mt. Airy.....		407	533					
Brewster...	University to Como.....		1076						
Burr...	C. St. P. M. & O. R. R. to Brainerd.....		3498						
Bradford...	Hampden to Endicott.....		819						
Bradley...	Maryland to 236 feet of.....		256						
Burgess...	At Dale and at Como.....		114						
Bayless Av.	Raymond to Langford P.....			2935					
Bayless Pl.	Raymond to Bayless Ave.....	902							
Burns...	Mound to Griffith.....		2753						
Blake...	Raymond to Langford P. P. E.....		282	186					
Beacon...	University to Shields.....	594							
Buffalo...	Capitol to Genesee.....		631						
Canada...	University to Valley.....		290						
Capitol...	Mississippi to Fairview.....		6866						
Carroll...	Rice to Cleveland.....		13202						
Conway...	Cypress to Maria.....		3067						
Cedar...	Summit to Como.....		2486						
Central Av.	East line of Central Park to Rice.....	557	1254						
Central P. D. E. & W.	Summit to Central Ave.....	1209							
Charles...	Rice to Prior.....		10171						
Churchill...	Front to Van Slyke.....	1103	1263						
College...	Rice to Third.....		1165						
Como Boul.	East line of lot 4, block 5, to north line of lot 5, block 1, Warrendale.....		666						
Como Av.	Park to Dale.....			469	6555				
Chelton...	Prior to Tatum.....		553						
Cherry...	267 feet west of Hoffman to Maria.....	267	565						
Cook...	Forrest to Rice.....		6123						
Case...	Forrest to Terrace.....		345	6551					
Claghorn...	Lafond to Van Buren.....		628						
Cypress...	North of Euclid.....	45							
Cromwell...	Manvel to Cudworth.....		1599						
Cudworth...	Bayless to Eustis.....		985						
Clark...	Whitall to Case.....		1908						
Cross...	Argyle to Lexington.....		966						
Cambridge...	Princeton to Lincoln.....		1060						
County Rd.	Langford to Dooley.....			256					
Crocus Pl.	Goodrich to Fairmount.....	1314							
Chatsw'th.	Evergreen to Van Slyke.....		983						
Cleveland...	Lincoln to University.....		3411	3313					
Cortland...	Capitol to Maryland.....		252	4600					
Cayuga...	Mississippi to Cortland.....		1630						
Carter...	West line lot 31, block 40, to County road.....		1886						
Dale...	Fairmount to Reservoir.....	4800	2110	5280	1453	14500	9234	1500	
Dayton...	Third to Cleveland.....	192	11578	4675					



## WATER MAINS ON HIGH SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Duluth.....	Seventh to Omaha Ry.....		434						
Dayton Pl.....	West to Maria.....	575							
De Soto.....	Mt. Ida to Lawson.....		3510						
Dawson.....	Arcade to Gotzian.....		3673						
Dooley.....	County road to 15 feet east of Raymond.....		1327						
Earl.....	Burns to Cook.....			3503	2201				
Edmund.....	Rice to Milton.....		8518						
Eichenwald.....	Sixth to Seventh.....		532						
Euclid.....	Maple to Earl.....		2391						
Elfeldt.....	Charles to Blair.....	1034							
Edgerton.....	York to Maryland.....			4272					
Everett Ct.....	Wheeler to Great North-ern Ry.....		355						
Evergreen.....	Victoria to Lexington.....		1876						
Ellis.....	Raymond to Seal.....		377						
Farrington.....	Summit to Lafond.....		3450						
Faulquier.....	290 feet east of Atlantic to Greenbrier.....		6153						
Fuller.....	Rice to 200 feet west of Oxford.....		8092						
Fifth.....	125 feet east of Hoffman to Maple.....		1543						
Floral.....	Summit to Oakland.....	518							
Fourth.....	Terry to 400 feet west of Maria.....		5342						
Francis.....	Arcade to Cypress.....		1204						
Front.....	Sylvan to Lexington.....		1140	10475	12	12			
Forest.....	Conway to Geranium.....		3113						
Fairmount.....	Dale to Milton.....		2931	518					
Fairview St.....	Valley to 200 feet north of Mt. Airy.....		378						
Feronia.....	Fairview to Prior.....		1378						
Freemont.....	Earl to Arcade.....		2577						
Fairview Av.....	Selby to Capitol.....			2542	1971				
Fry.....	Territorial road to Capitol.....	1087	6						
Force Main.....	Pump house to reservoir.....					7886	70		7353
Flandrau.....	Harvester to Stillwater.....		595						
Grand.....	Lawton to Cretin.....		8865						
Grove.....	Seventh to Pine.....				2618				
Grotto.....	Lincoln to Lafond.....		4594						
Goodrich.....	782 feet east of Dale to Oxford.....		5358						
Greenbrier.....	Seventh to Magnolia.....	512		650					
Gaultier.....	Sherburne to Cook.....		2730						
Gordon.....	Raymond to Carter.....		1387	693					
Geranium.....	Arcade to Burr.....		1919						
Gennessee.....	Mississippi to Buffalo.....		814						
Granite.....	Mississippi to Courtland.....		1622						
Hoffman.....	Clearmont to Seventh.....		2946						
Holly.....	Western to Victoria.....		5287						
Hague.....	Dale to Griggs.....		6512						
Hudson.....	Cypress to Maria.....		2389	194					
Hastings.....	Bates to Hester.....			3066					
Hewitt.....	Aldine to Syndicate.....		4541						
Hope.....	Fourth to Seventh.....		1156						
Hampden.....	Raymond to Hersey.....		1691						
Harvester.....	White Bear to Hazel.....			1306					
Hazel.....	Harvester to 300 feet north of Ames.....			980					
Horton.....	Van Slyke to Como Boulevard.....		419						
Hardenburg place.....	Lyton place to Atwater.....	349							
Iglehart.....	Wabasha to Cleveland.....		14700						
Jackson.....	Viola to Sycamore.....		236	2237	145				
Jay.....	St. Anthony to Fuller.....		656						
Jenks.....	Forrest to Courtland.....		6084						
Jessamine.....	Rice to Cypress.....		8830						





## WATER MAINS ON HIGH SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Park Ave.	Martin to Cook.	1771							
Princeton.	Macalester to Baldwin.	1399							
Pine.	Grove to Pennsylvania.	1829			387				
Portland.	Summit to Victoria.	5290							
Pennsylvania.	Olive to Pine.	505	342						
Plum.	Maple to Hoffman.	1150							
Prior.	Selby to University.	804	3447						
Payne.	Omaha Ry. to Ivy.	5629							
Pascal.	Minnehaha to Taylor.	1743							
Pym.	Bayless to Eustis.		736						
Priscilla.	Raymond avenue E.	542							
Pratt.	Raymond to Gibbs.	762							
Phalen.	Seventh to Stillwater.		1467						
Pacific.	Cypress to Hester.	1260							
Pleasant.	Osceola to St. Albans.		569						
Poplar.	N. P. R. R. yard to Courtland.	889							
Rice.	College to Jessamine.	495	2147	5990	1154				
Robert.	171 ft. south of University to 254 north of same.		425						
Rondo.	Rice to Terrace Park Ave.	10061							
Reaney.	English to Greenbrier.	6448							
Ramsey.	Oakland to Summit.	1239							
Ross.	Atlantic to Seventh.	2467							
Ravoux.	Rondo to Fuller.	616							
River.	Maria to Hoffman.	559							
Ravine.	Maple to 344 feet west of Maria.	1423							
Raymond.	University to Langford av.	3205		1588					
Robbins.	Bayless to Raymond P.	440							
Rose.	Arcade to Edgerton.	1497							
St. Anthony.	Rice to Cleveland.	13893							
St. Peter.	College to University.	2557							
Selby Ave.	Summit to Prior.	17002							
Seventh.	Grove to White Bear Ave.		15025						
Sherburne.	Jackson to Chatsworth.	400	10470						
Sinuen.	Sixth to Seventh.		541						
Suction main.	Pump house to terminal.					925			
Summit Ave.	C. P. D. E. to Baldwin.	913	5481	13384					
Summit Pl.	Nelson to Fuller.		2122						
St. Albans.	Pleasant to Martin.	2366	300	556					
Sims.	Edgerton to Earl.		4539						
Sims.	Forest to Edgerton.		3922						
Summit Ct.	East of Lawton.		362						
Short.	Maria to Hoffman.		591						
Snelling.	Goodrich to G. N. Ry.			11195					
Simpson.	Blair to Hewitt.		1528						
Sixth.	Hoffman to Arcade.		2646						
Sixth.	College to Summit.		537						
Sidney.	Raymond to Bradford.		610						
Scudder.	Blake to Langford Ave.			1347					
St. Clair.	Victoria to Oxford.			1935					
Stinson.	Gaultier to Western.	1266							
Sycamore.	Rice to Courtland.			2500					
Syndicate.	Lincoln to Summit.		906						
Stillwater.	White Bear to Ames.		541						
Tatum.	Minnehaha to Chelton.		367	4449					
Third.	Cypress to Summit.				778				
Thirteenth.	Pine to Broadway.								
Tilton.	Wabasha to Rice.		1278						
Thomas.	Como to Chatsworth.		7605						
Toppling.	At Como and at Dale.		118						
Taylor.	Charlotte to Holton.		2467						
Territorial road.	Raymond to Eustis.		1498						
University.	Broadway to Cromwell.		40	6387	3594	19164			
Valley.	Broadway to Jackson.				1789				
Viola.	Jackson to Rice.		1653						
Victoria.	St. Clair to Lafond.				9518				
Virginia.	Summit to Como.	2432	1798						
Van Buren.	Western to Wheeler.		6485						

## WATER MAINS ON HIGH SERVICE.—Continued.

STREET.	FROM STREET TO STREET.	4-inch.	6-inch.	12-inch.	16-inch.	20-inch.	24-inch.	30-inch.	36-inch.
Van Slyke...	Chatsworth to Lexington		1438						
Wabasha....	Summit to Park av.	537	842						
Western....	Summit to Como.			1775	6285				
Williams....	Olive to Mississippi.		857						
Waltham....	Laura to Prior.....	659							
Wayzata....	At Albemarle.....		90						
Wilder.....	Iglehart to St. Ant.		1388						
Whitall....	Payne to Clark.....		2301						
Walker.....	Hewitt to Great Northern Ry.....	807							
Wesley.....	Pascal to Fry.....	304	621						
Workhouse..	Around workhouse..		1043						
Wheeler St..	Bayless to Everett.			1012					
Westminster.	Cayuga to Case.....		909						
Wheeler Av..	Univ. to Shields.....		588						
Woodbridge.	Atwater to Front....		1207						
Winnipeg....	Rice to Sylvan.....		1142						
Wells.....	Edgerton to Arcade.....		1804						
Wells, south side.	From E. to W. end of retaining wall..	1130							
White Bear..	Seventh to Ames.....			1902					
York.....	Forrest to Cortland.		5782						
Total .....		37423	542470	1204000	87198	36224	15495	9234	8013

		Feet.
Total 4-inch pipe.....		37,423
Total 6-inch pipe.....		542,470
Total 12-inch pipe.....		1,204,000
Total 16-inch pipe.....		87,188
Total 20-inch pipe.....		36,224
Total 24-inch pipe.....		15,495
Total 30-inch pipe.....		9,234
Total 36-inch pipe.....		8,013

Total ..... 857,455 feet, or 162.3067 miles.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
HIGH SERVICE, WEST SIDE, TO JAN. 1, 1897.

STREET.	FROM STREET TO STREET.	6-Inch.	12-Inch.	16-Inch.
Annapolis...	At Manomin.....	.....	100	.....
Alice.....	Ohio to the park.....	141	.....	.....
Baker.....	Bidwell to Cherokee.....	.....	3530	.....
Belvidere...	South Robert to Oakdale.....	851	.....	.....
Bidwell.....	Morton to Robie.....	.....	346	362
Bunker.....	Oakdale to Brown.....	1808	.....	.....
Curtice.....	Oakdale to 250 feet east of Woodbury.....	1437	.....	.....
Cherokee.....	Annapolis to Smith.....	4241	.....	.....
.....	From Annapolis to tank.....	.....	100	.....
George.....	Stryker to 40 feet west of Manomin.....	3334	.....	.....
Hall.....	Morton to Louisa.....	894	.....	.....
Manomin.....	Baker to Annapolis.....	.....	2540	.....
Morton.....	Robert to Bidwell.....	.....	.....	2672
Oakdale.....	Midway to Curtice.....	1319	.....	.....
Ohio.....	Winona to Winifred.....	3485	.....	.....
Orleans.....	Cherokee to Page.....	2517	.....	.....
Page.....	Robert to Harvard.....	1344	.....	170
Robie.....	Bidwell to Bellows.....	522	.....	.....
Robert.....	Belvidere to Morton.....	.....	594	606
State.....	Page to pump house.....	.....	.....	140
Stryker.....	Tyler to Augusta.....	791	.....	.....
Sidney.....	Ottawa to Cherokee.....	346	.....	.....
Total.....	.....	23030	7219	3950

Total 6-inch pipe..... 23,030  
Total 12-inch pipe..... 7,219  
Total 16-inch pipe..... 3,950

Total ..... 34,199 feet, or 6.4771 miles.

RECAPITULATION OF THE TOTAL MILEAGE OF WATER PIPES IN THE  
CITY, JAN. 1, 1897.

Low service..... 361,416  
High service..... 857,455  
West Side high service..... 34,199

Total ..... 1,253,070 feet, or 237.3238 miles.

## INVENTORY OF STOCK AND TOOLS, JAN. 1, 1897.—PIPE SPECIALS

ETC.

345 feet 36-inch pipe (castiron).	1 24x10x20 Y.
228 feet 30-inch pipe (castiron).	1 20x20x20 Y.
96 feet 24-inch pipe (castiron).	1 20x16x16 Y.
156 feet 20-inch pipe (castiron).	1 12x12x12 Y.
62 feet 16-inch pipe (castiron).	1 20 to 12-inch reducer.
76 feet 12-inch pipe (castiron).	4 16 to 12-inch reducers.
115 feet 8-inch pipe (castiron).	8 12 to 6-inch reducers.
1458 feet 6-inch pipe (castiron).	1 8 to 6-inch reducer.
1210 feet 4-inch pipe (castiron).	2 6 to 4-inch reducers.
6 feet 3-inch pipe (castiron).	3 manhole frames.
4 pieces 36-inch curvature pipe.	9 manhole covers.
5 pieces 30-inch curvature pipe.	4 12x6-inch sleeves and gate, Smith patent.
5 pieces 24-inch curvature pipe.	3 8x6-inch sleeves and gate, Smith patent.
4 pieces 20-inch curvature pipe.	2 8x4-inch sleeves and gate, Smith patent.
2 pieces 16-inch curvature pipe.	4 6x6-inch sleeves and gate, Smith patent.
4 pieces 12-inch curvature pipe.	6 6x4-inch sleeves and gate, Smith patent.
1 piece 8-inch curvature pipe.	2 6x2-inch sleeves and gate, Smith patent.
32 pieces 6-inch curvature pipe.	1 4x2-inch sleeve and gate, Smith patent.
20 pieces 4-inch curvature pipe.	32 washers for open sleeve..
2 36-inch sleeves.	2180 pounds pig lead.
1 30-inch sleeve.	88 feet 8-inch pipe (wrought iron).
4 24-inch sleeves.	5 feet 6-inch pipe (wrought iron).
2 20-inch sleeves.	12 feet 4-inch pipe (wrought iron).
2 16-inch sleeves.	21 feet 3-inch pipe (wrought iron).
3 12-inch sleeves.	34 pounds hemp packing.
5 8-inch sleeves.	140 pounds yarn.
6 6-inch sleeves.	4 pounds oakum.
15 4-inch sleeves.	2 pounds resin.
1 30-inch open sleeve.	1 piece 36-foot pine pile.
1 24-inch open sleeve.	6 telephone poles.
1 20-inch open sleeve.	1600 bricks.
2 16-inch open sleeves.	9 cement tiles.
1 12-inch open sleeve.	3 1/2 barrels cement.
2 8-inch open sleeves.	1 1/2 rolls tar paper.
3 6-inch open sleeves.	3/4 barrel rock salt.
7 4-inch open sleeves.	50 pounds rivets.
1 6x6x6-inch open sleeve.	8 wire cable couplings.
2 36-inch plugs.	2 colls 1-inch wire rope.
1 24-inch plug.	1/2 barrel black enamel paint.
4 20-inch plugs.	13 1/2 pounds 20-p. nails.
2 16-inch plugs.	52 pounds 8-p. nails.
11 12-inch plugs.	1 gallon linseed oil.
9 8-inch plugs.	11 pieces 8-inch earthenware pipe.
25 6-inch plugs.	1 60-gallon oil tank.
22 4-inch plugs.	1 lot old sheet iron.
1 30x6-inch 4-way branch.	1 lot old brass (365 lbs.)
1 24x12-inch 4-way branch.	23 pieces of sheeting, 2x8, 10 feet long.
1 24x6-inch 4-way branch.	37 pieces of sheeting, 2x10, 8 1/4 feet average length.
2 24x4-inch 3-way branches.	9 pieces of sheeting, 2x12, 13 1/4 feet average length.
1 16x16-inch 4-way branch.	1 piece of sheeting, 3x12, 8 feet long.
1 16x12-inch 4-way branch.	9 pieces of timber, 6x8, 14 feet average length.
1 16x12-inch 3-way branch.	2 pieces of timber, 6x12, 12 feet long.
1 16x6-inch 4-way branch.	2 pieces of timber, 8x10, 12 feet long.
1 16x6-inch 3-way branch.	2 pieces of timber, 10x12, 16 feet average length.
2 16x4-inch 3-way branches.	3 pieces of timber, 12x12, 8 feet average length.
1 16x3-inch 3-way branch.	1 piece oak timber, 6x6, 7 feet long.
1 12x12-inch 4-way branch.	
2 12x12-inch 3-way branches.	
3 12x6-inch 4-way branches.	
6 12x6-inch 3-way branches.	
1 12x4 4-way branch.	
1 12x4 3-way branch.	
1 8x6 4-way branch.	
3 8x6 3-way branches.	
3 8x4 3-way branches.	
11 6x6 4-way branches.	
15 6x4 4-way branches.	
1 6x4 3-way branch.	
6 6x3 3-way branches.	
7 4x4 4-way branches.	
16 4x4 3-way branches.	
2 4x3 3-way branches.	



## GATES AND GATE DUPLICATES

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1 20-inch gate, old.</li> <li>11 6-inch gates, Smith patent.</li> <li>8 4-inch gates, Smith patent.</li> <li>3 2-inch gates, Smith patent.</li> <li>3 6-inch gates for old cement main.</li> <li>4 6-inch gates.</li> <li>1 4-inch gate, Ludlow, old.</li> <li>4 4-inch gates, single-faced, old.</li> <li>3 4-inch gates.</li> <li>9 3-inch gates, old.</li> <li>9 gate wrenches.</li> <li>11 gate boxes, complete.</li> </ul> | <ul style="list-style-type: none"> <li>7 gate box center pieces.</li> <li>9 gate box cases.</li> <li>110 gate box covers.</li> <li>2 valve rods, 7 feet long.</li> <li>1 valve rod, 12 feet long, for air vents.</li> <li>1 valve rod, 18 feet long, for air vents.</li> <li>3 2-inch brass elbows for air vents.</li> <li>Miscellaneous lot of gate duplicates (spindles, etc.)</li> </ul> |
|--|---|

## HYDRANTS.

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>3 S. hydrants, for reserve.</li> <li>1 D. hydrant, for reserve.</li> <li>3 D. Mathew hydrants, complete.</li> <li>12 S. Mathew hydrants, complete.</li> <li>9 casings for sprinkling standpipes.</li> <li>3 casings for S. hydrants.</li> <li>2 casings for D. hydrants.</li> <li>21 caps for standpipe casings.</li> <li>10 bottom valves for D. hydrants.</li> <li>19 bottom valves for S. hydrants.</li> <li>33 nozzle caps (18 large, 15 small).</li> <li>21 nozzles (6 large, 15 small).</li> <li>11 cases for sprinkling standpipe casings.</li> <li>5 pots for S. hydrants (2 6-inch, 3 4-inch).</li> <li>1 kit of tools for repairing hydrants.</li> <li>1 lot standard samples.</li> <li>22 hydrant wrenches.</li> <li>1 spanner.</li> <li>315 feet 2½-inch hose (thereof 14 pieces in 5-foot lengths, with nipples).</li> </ul> | <ul style="list-style-type: none"> <li>250 feet 2-inch hose for standpipes.</li> <li>76 feet ¾-inch hose for standpipes.</li> <li>1 pair hose clamp plyers.</li> <li>18 feet 2½-inch galvanized pipe.</li> <li>75 feet 2-inch galvanized pipe.</li> <li>200 feet 2-inch galvanized pipe.</li> <li>4 pairs 2½-inch hose couplings.</li> <li>3 2-inch hose nozzles.</li> <li>5 2-inch brass reducers, for hose couplings.</li> <li>12 rods for S. hydrants.</li> <li>5 rods for D. hydrants.</li> <li>2 boilers for thawing out frozen hydrants.</li> <li>Miscellaneous lot of hydrant duplicates.</li> <li>2 pairs plyers for sprinkling standpipe repairs.</li> <li>1 chain for hydrant repairs.</li> </ul> |
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## PIPE-LAYING TOOLS.

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| <ul style="list-style-type: none"> <li>1 work bench.</li> <li>3 tool boxes.</li> <li>2 lead ladles, 2 solder irons, 3 solder molds.</li> <li>3 lead pots, 1 6-inch chain tongs.</li> <li>3 lead furnaces.</li> <li>1 lead pot and furnace on wheels.</li> <li>2 iron plates for derrick drum.</li> <li>4 derricks (2 4-legged and 2 3-legged).</li> <li>1 derrick (3-legged) for tunnel use.</li> <li>1 Bagnall &amp; Land diaphragm pump.</li> <li>Miscellaneous extra pieces to diaphragm pump.</li> <li>1 force pump, 1-inch.</li> <li>1 drip pump, ½-inch.</li> <li>38 shovels.</li> <li>2 grubhoes.</li> <li>28 picks.</li> <li>10 sandrock picks.</li> <li>8 sledge hammers, 54 sledge handles.</li> <li>2 striking hammers.</li> <li>1 ball-faced hammer.</li> <li>2 crow bars.</li> <li>12 rock drills.</li> <li>1 electric battery for blasting rock.</li> <li>25 electric fuses.</li> <li>3 tapping bars for blasting.</li> <li>30 pieces blasting timbers.</li> <li>8 blasting chains.</li> <li>2 plug and feather drills.</li> </ul> | <ul style="list-style-type: none"> <li>2 castiron pipe cutters, for 4 to 12-inch pipe.</li> <li>1 pipe cutting machine for small pipe.</li> <li>3 spirit levels.</li> <li>2 saws.</li> <li>1 ax.</li> <li>2 hatchets.</li> <li>2 mason's trowels.</li> <li>2 mortar hoes.</li> <li>2 sand sieves.</li> <li>1 pair rubber mittens.</li> <li>1 pipe vise.</li> <li>1 blacksmith vise.</li> <li>13 iron rings for mauls.</li> <li>2 pipe chains, 6 and 9 feet, respectively.</li> <li>4 monkey wrenches.</li> <li>3 files, 14-inch.</li> <li>18 jack screws.</li> <li>1 tapping machine, Smith patent, with 4 eyeballs and extra dome.</li> <li>6½ pairs calking tools.</li> <li>4 calking hammers.</li> <li>13 yarning tools.</li> <li>12 cape chisels.</li> <li>5 cutting chisels.</li> <li>13 cold chisels.</li> <li>14 diamond points.</li> <li>15 pairs cement pipe molds.</li> <li>2 auger bits, with handles.</li> <li>1 brace and bit.</li> </ul> |
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## PIPE-LAYING TOOLS.—Continued.

1 pair rock grabbing hooks.	2 ratchets.
2 steel rock-wedges.	1 pair of calipers.
4 dogs, 1 to 3 feet long.	1 pair of steel compasses.
2 puddling bars, with wrench.	1 steel square.
3 pipe chains for 12 20-inch pipe.	1 Anvil.
2 pipe scrapers.	1 draw knife.
5 6-inch logging caps.	2 branding irons.
3 dirt scrapers.	1 iron bar.
1 drag rake.	4 wooden blocks and falls.
17 dirt rammers.	150 feet 1-inch rope.

## CONNECTION STOCK AND TOOLS.

5258 pounds $\frac{1}{2}$ to $1\frac{1}{2}$ -inch lead pipe, extra strong.	4 $1\frac{1}{2}$ -inch stop and waste valves.
250 feet $1\frac{1}{2}$ -inch galvanized pipe.	154 Bingham & Morgan stop boxes.
714 feet $1\frac{1}{2}$ -inch galvanized pipe.	2 sample stop boxes.
668 feet $\frac{3}{4}$ -inch galvanized pipe.	1 sample wrought iron stop box.
60 feet $\frac{1}{2}$ -inch tin pipe, for thawing out services.	3 wrought iron stop boxes.
26 pounds solder.	1 lot condemned stop boxes.
8 2-inch plugs.	1 Valve rod for turning on and shutting off water.
10 $1\frac{1}{2}$ -inch plugs.	7 folding stop cock rods.
7 $1\frac{1}{2}$ -inch plugs.	6 straight stop cock rods.
12 1-inch plugs.	6 stop cock poles.
36 $\frac{3}{4}$ -inch plugs.	6 stop box covers for asphalt paved streets.
15 $\frac{1}{2}$ -inch plugs.	3 extra special covers for stop boxes.
2 $1\frac{1}{2} \times \frac{1}{2}$ -inch Ts.	2 sand rock connection drills.
6 $1\frac{1}{2} \times \frac{1}{2}$ -inch Ts.	1 sandrock auger.
3 $1\frac{1}{2}$ -inch Ts.	12 drill hole scrapers.
1 2-inch union.	6 scoopers.
3 $1\frac{1}{2}$ -inch unions.	3 dirt augers.
1 $\frac{3}{4}$ -inch union.	4 pairs 2-inch extension pipe tongs.
1 $1\frac{1}{2}$ -inch brass nipple.	2 pairs $1\frac{1}{2}$ -inch extension pipe tongs.
3 1-inch brass nipples.	4 pairs 1-inch extension pipe tongs.
40 1-inch corporation cocks.	1 crow foot for tapping mains.
13 $\frac{3}{4}$ -inch corporation cocks.	1 tap handle.
27 $\frac{3}{4}$ -inch corporation cocks.	2 Mueller tapping machines, complete with taps and drills from $\frac{1}{2}$ to 1 inch.
27 $\frac{1}{2}$ -inch corporation cocks.	2 Plumber's furnaces.
1 2-inch stop and waste cock.	1 kit plumbing tools, complete.
16 1-inch stop and waste cocks.	4 rimmers, 1 to 2 inch.
40 $\frac{3}{4}$ -inch stop and waste cocks.	6 taps and drills, from 13-16 to 2-inch.
42 $\frac{1}{2}$ -inch stop and waste cocks.	
15 2-inch Chapman valves.	
1 2-inch check valve.	
39 2-inch old valves.	
4 $1\frac{1}{2}$ -inch valves.	
8 $1\frac{1}{2}$ -inch stop and waste valves.	

## STABLE AND MISCELLANEOUS ACCOUNT.

4 horses.	5 buckets.
1 large truck for hauling 20 to 30-inch pipe (4-wheeled).	7 wheelbarrows.
1 large truck for hauling 12 to 20-inch pipe (2-wheeled).	3 wheelbarrows, for tunnel use.
1 light truck.	2 2-wheeled pipe trucks.
2 light wagons.	11 brooms.
2 buggies.	2 steel brooms.
2 light bob sleighs.	1 writing desk.
3 cutters.	1 1-gallon can.
4 sets single harness.	1 5-gallon can.
6 horse blankets.	2 pairs window sash.
22 pairs bedding blankets.	1 beam scale.
4 robes.	2 platform scales.
2 manure forks.	5 kerosene barrels (empty).
Small quantity of feed for horses.	1 spade.
2 farmer's kettles.	1 garden hose.
1 curry comb and brushes.	1 plow.
1 box wood stove.	1 sod cutter.
10 pairs rubber boots.	1 roller toboggan, with 1000 feet $\frac{1}{2}$ -inch rope.
18 lanterns.	1 well measure windlass.
26 lamp globes.	2 tape lines.
2 tents.	1 log hook.
1 grindstone.	2 drag forks.
	3 pairs of grab tongs.

## MIDWAY STATION.

## GATES.

3 gate wrenches.		1 gate box, 6-inch.
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## HYDRANTS.

1 S. Mathew hydrant (for repairs).		Miscellaneous lot of hydrant dupli-
3 hydrant wrenches.		cates.
1 kit of tools for repairing hydrants.		

## PIPE LAYING TOOLS.

1 work bench.		1 striking hammer (5 lbs.)
1 tool box.		3 files, 14 inches long.
2 lead ladles.		1 crowbar.
1 lead pot.		1 pipe vise.
1 lead furnace.		3 pipe chains for 12 to 20-inch.
1 lead pot and furnace on wheels.		13 maul heads.
2 monkey wrenches for gate and hy-		1 buck saw.
drant repairs.		1 hand saw.
2 derricks (1 3-legged and 1 4-leg-		1 spirit level.
ged).		1 set calking tools.
6 shovels (short-handled).		2 blocks and falls, with reserve rope.
3 picks.		30 pounds hemp packing.
2 sledge hammers (16 lbs.)		200 pounds pig lead.

## CONNECTION STOCK AND TOOLS.

12 $\frac{3}{4}$ -inch corporation cocks.		1 valve rod for turning on and shut-
10 1-inch corporation cocks.		ting off water.
1 $\frac{1}{4}$ -inch stop and waste valve.		1 kit of plumbing tools, complete.
9 $\frac{3}{4}$ -inch stop and waste cocks.		1 Mueller tapping machine.
11 1-inch stop and waste cocks.		1 plumber's furnace.
3 stop boxes.		1 set calking tools.
1 stop cock rod for turning on and		
shutting off water.		

## STABLE AND MISCELLANEOUS ACCOUNT.

1 light truck.		1 grinding stone.
1 garden hose (50 feet long).		4 lanterns.
1 scythe.		1 wheelbarrow.
1 mason's trowel.		1 dirt scraper.
1 tape line (50 feet).		1 fork.
1 pair rubber boots.		

INVENTORY OF TOOLS AND STOCK AT McCARRON LAKE PUMPING  
STATION, JAN. 1, 1897.

1 Vise.		1 24-inch square.
1 set of screw dies and taps from		3 chairs.
$\frac{1}{4}$ inch to 1 inch.		2 ladders.
1 set of pipe dies and taps from: $\frac{1}{4}$		2 step ladders.
inch to 2 inches.		1 good cupboard.
2 pipe cutters.		1 oil and waste cupboard.
1 pair 2-inch pipe tongs.		1 work bench.
1 24-inch pipe wrench.		6 cuspidors.
1 12-inch pipe wrench.		1 ratchet.
1 24-inch Coe's wrench.		1 ratchet brace and bit.
1 14-inch Coe's wrench.		4 jack screws.
1 8-inch Coe's wrench.		75 feet $\frac{3}{4}$ -inch rope and block.
1 portable blacksmith forge.		1 draw knife.
1 anvil.		1 planer.
1 sledge hammer.		6 chisels.
2 hand hammers.		1 Edison recording gauge.
1 soft hammer.		1 Thompson's indicator.
6 files.		1 lot of old pipe and fittings.
2 saws.		1 gate wrench.
1 ax.		3 steel brooms.
1 hatchet.		2 brooms.
1 $\frac{1}{2}$ -ton chain block.		1 pair rubber boots.
1 3-ton chain block.		175 pounds waste.
50 feet $\frac{1}{4}$ -inch rubber hose.		3 pounds tallow.



## INVENTORY AT MCCARRON LAKE.—Continued.

50 feet $\frac{3}{4}$ -inch rubber hose.	25 pounds hemp packing.
3 oil tanks.	5 pounds steam packing.
3 2-quart oil cans.	5 pounds rainbow packing.
2 3-quart oil cans.	2 pounds polishing paste.
4 hand oilers.	40 bars of soap.
1 quart measure.	18 cans of lye.
1 12-inch level.	20 gallons cylinder oil.
1 steel coal wheelbarrow.	2 gallons engine oil.
3 coal scoops.	5 gallons kerosene oil.
2 coal hammers.	125 tons Yough. coal.
1 Fairbank 6-ton.	4 shovels.
1 Fairbank 1000-pound scale.	1 water pail.
1 grindstone.	1 Concord buggy.
3 large lanterns.	1 regrounding valve machine, $\frac{3}{4}$ to 4
4 small lanterns.	inch.
1 clock.	1 old 54-inch boiler front.
1 writing desk.	1 stove, with pipe at terminal cham-
12 electric lamps.	ber.

INVENTORY OF STOCK AND TOOLS AT THE WEST SIDE PUMPING  
STATION, JAN. 1, 1897.

1 24-inch pipe wrench.	1 set engineer 5-piece brass hand
1 14-inch Coe's wrench.	oilers.
1 hand saw.	2 $\frac{1}{2}$ -gallon measures.
1 ax.	2 hand oilers.
1 hatchet.	1 set of wrenches for pumps.
3 oil tanks.	1 set fire tools.
1 1000-pound Fairbanks scale	100 feet of $\frac{3}{4}$ -inch garden hose.
1 vise.	25 feet of 1-inch hose.
1 work bench.	25 feet of $\frac{3}{4}$ -inch steam hose.
2 coal shovels.	14 tons Yough. coal.
1 wardrobe.	$\frac{1}{4}$ cord slabs.
1 clock.	42 gallons engine oil.
3 large lanterns.	25 gallons cylinder oil.
1 writing desk.	5 pounds waste.
2 chairs.	5 gallons boiler compound.
1 gate wrench.	1 lawn mower.
1 steel coal wheelbarrow.	1 hay rake.
1 cuspidor.	1 4-inch flue cleaner.
1 step ladder.	

INVENTORY OF STOCK AND TOOLS AT BALDWIN LAKE PUMPING  
STATION, JAN. 1, 1897.

1 No. 10 centrifugal pump.	2 low pressure pistons.
1 force pump.	1 set wrenches for pumps.
2 pieces 10-inch wrought iron pipe,	1 34-inch old smoke stack, 45 feet
6 feet long.	long.
2 pieces 10-inch wrought iron pipe,	1 3-inch old safety valve.
5 feet long.	1 4-inch old gate valve.
Some old pipe and fittings.	1 hand push car.
2 10-inch Ellis.	200 lin. feet second-hand light R. R.
2 steel brooms.	track.
1 3 $\frac{1}{2}$ -inch steam flue cleaner.	2 flat boats.
12 brass springs.	4 cords oak wood.
2 gate wrenches.	

INVENTORY OF STOCK AND TOOLS AT VADNAIS LAKE PUMPING  
STATION, JAN. 1, 1897.

## GATE HOUSE.

4 storm windows.	8 steel traps.
4 window screens.	1 gate wrench.
2 brooms.	1 gate lock and key.
1 steel broom.	1 boat chain.
1 shovel.	1 row boat.
1 galvanized pail.	1 pair oars.
1 ice chisel.	1 pair rubber boots.
1 ice saw.	



## DWELLING HOUSE.

15 storm windows.	1 hand pump.
13 window screens.	1 kalsomine brush.
3 screen doors.	2 storm doors.
1 thermometer.	2 ventilators for chimneys.

## PUMPING STATION.

5 monkey wrenches.	1 shovel.
2 S. wrenches.	1 pick.
2 pipe wrenches, Stillson.	1 vise.
2 cold chisels.	1 steel coal wheelbarrow.
4 files.	1 1384 scale.
2 hammers.	1 grindstone.
4 hand lanterns.	1 writing desk.
5 large globe lanterns.	2 chairs.
1 spirit level.	1 cuspidor.
3 paint brushes.	1 8-day clock.
1 hand saw.	1 ax.
1 3-inch steel flue cleaner.	1 grub hoe.
3 50-gallon oil tanks.	1 brush hook.
40 gallons cylinder oil.	1 iron block plane.
50 gallons engine oil.	1 draw knife.
40 gallons kerosene.	1 tray brass oilers.
10 tons coal.	2 steel oilers.
1 coal pick.	1 brace and bit.
2 scoop shovels.	1 belt punch and rivet set.
1 40 feet 1-inch rubber hose and nozzle.	1 Fairbanks platform scale.
50 feet 1 1/4-inch rubber hose and nozzle.	

## INVENTORY OF STOCK AND TOOLS AT HIGH SERVICE RESERVOIR.

JAN. 1, 1897.

4 chairs.	10 window screens.
1 rocker.	1 grinding stone.
1 rug, 7x9 feet.	2 gate wrenches.
1 table.	1 air vent rod.
1 screen door.	1 stop wrench for valves.
3 window shades.	2 sets of sprinkling hose.
4 cellar storm windows.	1 spade.
12 storm windows.	2 rakes.
2 storm doors.	1 sickle.
8 shovels.	1 manure fork.
4 picks.	1 coal stove and 6 stove thimbles.
1 plow.	1 paint brush.
1 lawn mower.	60 feet 1/2-inch rope.
2 scythes.	1 sledge hammer, 16 lbs.
5 scythe stones.	2 mortar hoes.

INVENTORY OF STOCK AND TOOLS AT CENTERVILLE LAKE PUMP-  
ING STATION, JANUARY 1, 1897.

1 vise.	200 pounds 50-p spikes.
1 pair pipe tongs.	6 feet 12-inch earthenware pipes.
1 24-inch pipe wrench.	7 wheelbarrows.
1 12-inch pipe wrench.	1 4-inch centrifugal pump and suction hose.
1 24-inch Coe's wrench.	1 4-inch diaphragm pump and suction hose.
1 14-inch Coe's wrench.	20 feet 4-inch iron pipe for 4-inch centrifugal pump.
1 6-inch Coe's wrench.	1 4-inch ell for 4-inch centrifugal pump.
1 hand hammer.	3 blocks and falls for 3/4 and 1-inch rope.
1 coal hammer.	2 blocks and falls on hand driver.
1 saw.	2 blocks and falls on 8-inch pump.
1 hatchet.	1,000 feet 3/4-inch rope.
1 ax.	1 rubber diaphragm for Edison pump.
3 oil tanks.	1 rubber roll for laying 36-in. pipe.
2 1-quart cans.	2 sheeting hand drivers.
2 3-quart cans.	2 3-inch lagging caps.
1 steel coal wheelbarrow.	
2 coal scoops.	
1 grindstone.	
6 large lanterns.	
2 hand lanterns.	
2 bracket lamps.	
1 clock.	

## CENTERVILLE LAKE PUMPING STATION—Continued.

1	drawknife.	1	mortar hoe.
1	ratchet, brace and bit.	1	4-legged derrick.
1	chain.	18	shovels.
1	2-ton chain block.	6	picks and handles.
1	4-inch steam flue cleaner.	6	wooden mauls.
1	4-inch steam flue cleaner rod.	3	crow bars.
50	feet 1½-inch rubber hose.	1	lead pot.
1	pair rubber boots.	1	ladle.
1	¾-inch auger.	1	furnace.
2	crow bars.	2	pike poles.
20	gallons engine oil.	1	¾-inch ship auger with long handle.
16	gallons cylinder oil.	1	¾-inch ship auger with long handle.
10	gallons kerosene.	1	pair carrying hooks.
5	pounds waste.	2	monkey wrenches.
6	pounds piston packing.	1	gate wrench, 11 feet long.
6	chisels.	1	wood saw.
4	files.	1	cross-cut saw.
2	calking tools.	4	galvanized buckets.
1	steel hand oiler.	2	hand axes.
1	1,000 pounds Fairbank scale.	1	long handled axe.
1	No. 3 Blake boiler feed pump.	1	old drill (no points).
54	tons coal.	1	hot blast blower.
1	cord oak wood.	3	lengths sounding rods.
1	boxstove for wood.	6	pairs rubber boots.
3	lengths of stove pipe.		
100	pounds yarn.		
2,000	pounds pig lead.		

## INVENTORY OF THE METER DEPARTMENT, DECEMBER 31, 1896.

1	kit plumbers' tools.	1	carpenter's hammer.
2	plumbers' furnaces.	4	wood chisels.
2	tinners' solder irons.	1	spirit level.
4	pipe wrenches.	1	fifty-foot tape.
7	S. wrenches.	2	two-foot rules.
1	machinist's hammer.	2	sealing stamps.
1	rivet hammer.	1	Fairbanks 1,200-lb. scale.
10	files.	1	testing tank.
6	screw drivers.	4	sheets of cardboard packing.
2	pairs pliers.	1	lb. sealing wax.
1	small chisel.	A	lot of miscellaneous fittings from ¼-inch to 4 inches.
3	large chisels.	4	sets of inside Empire gearing.
2	small punches.	1	dozen of change gear wheels for empire.
2	calipers.	3	sets of Crown's inside gearing.
1	divider.	1½	dozen Crown change gear wheels.
1	breast drill, from 1-16-inch to ½-in.	12	sets of Hersey inside gearing.
1	hack saw.	1	dozen Hersey change gear wheels.
10	hack saw blades.	1	dozen Thomson B. change gear wheels.
4	small steel bars.	1	dozen Thomson B. eccentric gears.
1	compass saw.	1	dozen valves, rings and plunges.
2	hand saws.	1	Worthington meter.
1	two-foot square.	2	pairs rubber boots.
1	plane.		
1	saw set.		

GEO. DOORLEY,  
Inspector of Meters.

# CITY ENGINEER'S REPORT.

OFFICE OF THE CITY ENGINEER.

ST. PAUL, MINN., JAN. 1, 1897.

*Board of Water Commissioners.*

GENTLEMEN: I submit herewith my annual report of the work of the Board of Water Commissioners which has been under the charge of the engineering department of the city of St. Paul for the thirteen months ending Dec. 31, 1896, together with such statistics and records of the office as pertain to the water department and seem proper to bring to your attention. The change of the fiscal year from November 30th to December 31st to correspond with the reports of other departments necessitates the covering of thirteen months with this report.

The following are the contracts which have been let by the Board of Water Commissioners during the year 1896, and have been directly under the charge of the engineering department, and for which the necessary surveys, plans specifications and estimates have been made:

Thirty-six inch force main, from McCarron lake pumping station to the reservoir; Fairbanks, Morse & Co., contractors.	
Contract finished this year.....	\$7,265.87
Forty-two inch wooden conduit and weir chamber, from the junction of the Otter lake conduit to the Centerville lake pumping station; Hennessy & Cox, contractors.	
Contract price .....	30,758.30
Estimates allowed .....	29,258.30
Centerville lake pumping station; Hennessy & Cox, contractors.	
Contract price .....	9,486.00
Estimates allowed .....	9,436.00
Fifteen million gallon pumping engine at Centerville lake pumping station; E. P. Allis & Co., contractors.	
Contract price .....	20,700.00
Estimates allowed .....	10,350.00
Artesian wells at Centerville lake; J. F. McCarthy, contractor.	
Contract finished. Total .....	16,639.43
Laying pipe line and connecting up artesian wells at Centerville lake; Nicholas Feyen, contractor.	
Contract finished. Total .....	2,996.76
Two artesian wells at Vadnais lake; S. Swanson, contractor.	
Contract finished. Total .....	1,095.00



New boiler at McCarron lake pumping station; John Kenny, contractor.	
Contract price .....	1,162.50
Estimates allowed .....	986.00
Grading on Centerville conduit line; Nicholas Feyen, contractor.	
Contract price .....	1,145.00
Estimates allowed .....	1,095.00
Transporting boilers to Centerville lake; Nicholas Feyen, contractor.	
Contract finished .....	74.00
Smokestack and flue, Centerville lake pumping station; John Kenny, contractor.	
Contract price .....	270.00
Special castings for Centerville extension; St. Paul Foundry Co.	
Contract finished .....	3,530.46

## CONTRACTS LET IN 1895 AND COMPLETED IN 1896.

Concrete conduit from Otter lake; Ransome Subway Co., contractor.	
Total contract price .....	8,850.79
Estimates allowed in 1896 .....	1,960.50
Pump well and connection of artesian wells at Vadnais lake; Charles Stone, contractor.	
Total contract price .....	3,875.00
Estimates allowed in 1896 .....	1,580.00
Five million gallon pump at Vadnais lake; E. P. Allis & Co., contractors.	
Total contract price .....	7,500.00
Estimates allowed in 1896 .....	3,750.00
Engine building at Vadnais lake; St. Paul Building Co., contractor.	
Contract price and estimates allowed .....	397.00

## VADNAIS LAKE PUMPING PLANT.

The 5,000,000 gallon pumping plant at Vadnais lake was tested Jan. 21, 1896. A copy of the results of said test is herewith submitted in order that the board may have a published record for future reference. A record of the work of the pump during the year is given under the head of "Cost of Pumping."

The comparative cost of pumping of the old and new pumping plant at Vadnais lake is as follows:

1895—Total, 237,043,000 gallons; cost, \$2,044.44; cost per million gallons, \$86.25.

1896—Total, 932,141,850 gallons; cost, \$2,643.00; cost per million gallons, \$28.35.



From the above statement of quantities and expense it will be seen that the cost per million gallons delivered in 1896 with the new pumping plant is only 32.87 per cent of the cost in 1895, or a reduction of expenses of 67.13 per cent, which is very close to the estimate given in my annual report for 1895.

As the Vadnais lake system of artesian wells failed to produce continuously 5,000,000 gallons (the capacity of the pump), two additional wells, eight inches in diameter, have been sunk. The contractors experienced a great deal of difficulty in sinking one of the wells; therefore, on account of the lateness of the season, they have not as yet been connected up with the system. The depth of well No. 7 is 112.84 feet and well No. 8 120 feet. Each well is provided with a Cook strainer, about fifty feet long, the contract price being \$6.25 per lineal foot. The size of the openings is what is known as No. 7. The contract price for the wells was \$1.50 per lineal foot. The cost of cutting pipe and putting on valves was fifty dollars per well. The total cost of the wells complete, including strainers, valves, air chambers, etc., was \$1,095.

#### TEST OF THE FIVE MILLION GALLON PUMPING ENGINE AT VADNAIS LAKE, JAN. 21, 1896.

(Duration of test from 9:04 a. m. to 6:27 p. m.)

Total amount of steam.....	5,437.5 lbs.
Average reading suction gauge.....	8.58 lbs. per sq. in.
Average reading pressure gauge.....	5.41 lbs. per sq. in.
Total number of revolutions.....	23,002
Area of pump plunger.....	339.1168 sq. in.
Length of stroke.....	2.5 feet

Indicator cards taken on the pump end during the test showed that from lack of sufficient supply of water from the wells the pump chamber would only fill in proportion of 92.2 per cent. Making therefore a reduction of 7.8 per cent in the work performed on the pressure side of the pump, the duty developed by the pumping engine will be 97,320,000 foot pounds.

#### FORCE MAIN.

The thirty-six inch force main from the McCarron lake pumping station to the reservoir has been completed with the exception of the connection of the reservoir and the pumping station. The work was delayed so late on account of the failure of delivery of some special castings that it was finally decided not to make the connections until spring. The old twenty-inch force main will give all the necessary service until that time. The total length of pipe laid was 7,344 feet. The pipe and specials were purchased by the city and delivered on the ground. The Board of Water Commissioners also furnished all lead and yarn required for laying the

pipe. The work of laying was let by contract at forty-nine and one-half cents per lineal foot. The pipe line for a length of 1,260 feet was carried across a very bad swamp. Across this swamp the pipe rests on piling. The length of piles driven below cut-off was eighteen to sixty-two feet. The longest of these did not reach a solid bottom. The accompanying profile shows the length of piles as driven; also, the fall of the hammer at last blow in feet and the penetration of piles in inches. The weight of the hammer was 2,500 pounds. Two piles were driven in each bent, and the bents were spaced twelve feet apart. The piles were capped with 6x14-inch timbers, on which were placed two longitudinal timbers, twelve feet long, 12x12 inches and three feet six inches between centers, and the pipe rested on saddles placed on top of the longitudinal timbers. The accompanying plan shows the method of construction. All the timbers are below the water level of the swamp.

#### CENTERVILLE LAKE EXTENSION.

According to my recommendation of last year the Centerville lake extension for the further increase of the water supply has been practically completed. It consists of a 42-inch wooden conduit from the junction chamber on the Otter lake conduit to the pumping station at Centerville lake. It is constructed with 2x6 inch staves of Oregon fir, milled to conform to the exact form of the conduit. The lengths used were from 12 to 22 feet, twenty-five staves completing the circle. They were held together by one-half inch steel bands spaced 18 inches apart where the conduit was not under pressure and from 4 to 12 inches apart where under pressure. The ends of the bands were brought together by a special clip and tightened by a nut. The ends of the staves were united by inserting a piece of steel plate  $\frac{1}{2}$  inch thick,  $1\frac{1}{2}$  inches wide and 6 inches long into a saw-cut at the end of each stave. When the staves were driven up it formed a tight joint. The contract price including excavation was \$1.89 per lineal foot. Some difficulty was experienced with the foundation, as the line crossed several marshes. Several plans were tried but the most successful with the least expense was to drive piles by hand, three piles in each bent, about three feet apart; and to build the conduit inside a form fastened to a three inch plank which formed a cap to the piles. The plan of this construction is herewith shown. The conduit is figured to discharge 15,000,000 gallons of water in 24 hours and has a grade of five feet from the junction chamber to the weir chamber, or one foot in 2,000 feet. The figured velocity is 2.4 feet when running full. There are seven manholes, the construction of which is fully shown on the plan. The weir chamber is a brick building 43x23 feet outside. The water is forced from the pumping station to the weir and then runs by gravity to the Otter lake conduit. From the weir chamber to the pumping station the pipe is under pressure and where it joins to the castiron pipe the pressure is 9.4 pounds per square inch. The total cost of the conduit and weir chamber, including manholes, blow-offs, etc., is shown in the accompanying table.



## PUMPING ENGINE.

The pumping engine, designed to deliver 15,000,000 gallons of water in twenty-four hours, was built by E. P. Allis & Co. The contract price was \$20,700.

The engine is a vertical compound condensing engine, with single acting outside packed plungers. The suction pipe is thirty-six inches in diameter, and the discharge pipe thirty-six inches in diameter for thirty-five feet, where it connects with the forty-two inch conduit, 1,500 feet long, to the well chamber.

The pump is required to hold a vacuum of twenty-one feet at the basement floor. This will give a total lift on the pump of forty-five feet exclusive of friction in the pump and discharge pipe.

The test of the pump has not yet been made. It is, however, running successfully, and everything will probably be ready in about ten days.

The cost of the engine-house and engine foundations was \$9,486.

## CENTERVILLE LAKE WELLS.

The experimental wells at Centerville lake demonstrated that there were two distinct strata from which flowing wells could be obtained, and that the head of water on each strata was practically the same, rising to about elevation 200, city base.

The first is a water-bearing strata of sand and gravel, which was struck at a depth from the surface of from fifty to seventy-six feet, and was from fifteen to twenty-two feet in depth.

The second water vein is in the sand rock, and was struck at a depth of about 350 feet, the wells varying in depth from 302 to 523 feet.

The accompanying plan shows the various strata through which the wells are driven and the depth and dip of each strata; also, the depth of each well. The shallow wells are designated by numerals, the deep wells by letters.

The location of the wells is along the shore of Centerville lake for a distance of 2,260 feet.

The 36-inch pipe from the pumping station is at about the center of the line, and a 24-inch pipe branches out in each direction to connect up the wells. This pipe is reduced to a 20-inch, 16-inch, 14-inch and 12-inch towards each end. The total length of the different kinds is as follows: Twenty-four inch, 766 feet; 20-inch, 536 feet; 16-inch, 475 feet; 14-inch, 126 feet; 12-inch, 357 feet, or a total of 2,260 feet.

There are in all ten deep wells twelve inches in diameter which extend to the sand rock. Total depth, 3,876.5 feet. Average depth, 387.7 feet. There are also eighteen shallow wells, eight inches in diameter, sunk to the sand and gravel strata. Total depth, 1,124.5 feet. Average depth, 62.5 feet. The shallow wells are all provided with a Cook strainer of an average length of twenty-feet.

Each well has a separate connection with the main pipe, so it is possible to connect up and test any one or any number of wells.

In sinking the deep wells quite a difference was found in the amount of flow. At well I, an excellent flow was struck at a depth of eighty feet, and it did not materially increase although sunk to a depth of 344 feet. In pumping from one well the neighboring wells were affected, although not in a like degree.

We had expected to obtain from these wells from ten to twelve million gallons in twenty-four hours, and the results in starting the pumps show that we shall probably get about 10,000,000. We hope that after pumping for some time the wells will clear up and give a little better flow, as that was our experience at Vadnais lake. It will take some time to make the tests, and find out how much we are getting from the shallow wells and how much from the deep wells, and it may be found advisable to sink some of the shallow wells to a greater depth, but we are sure of a supply greater than the daily consumption, and the character of the water can hardly be surpassed. The cost of the wells is shown in the table and the location and details of construction are shown in the accompanying plans.

#### INTAKE.

To provide for taking water from the lake system the 36-inch suction is extended out into the lake 810 feet beyond the junction with the 24-inch pipe line connecting the artesian wells. At the end of the pipe will be placed a sunken crib, the top of which will be eight feet below high water in Centerville lake, which is established at 190, city base. The depth of the water at the crib is ten feet. There is a 36-inch valve placed just beyond the 24-inch Y, and there are also valves on each of the 24-inch branches, consequently the water can be taken from the wells or the lake, or both, as may seem best.

The pipe is now being laid, and is about two-thirds the distance out to the crib. The trench for the pipe was sheeted, and then excavated and the pipe laid. Considerable trouble has been experienced from the water forcing its way under the sheeting and up in the bottom, the material being quite treacherous. The work is being done by the water board by day's labor under direction of the superintendent, Mr. Starkey. The cost of the intake, including pipe, will be about \$5,500.

This extension will very materially add to the quantity and quality of the St. Paul water supply, and with the exception of improvements in perfecting the storage capacity of the Rice lake system, it will probably be many years before any extensive extensions of the system will be required.

#### BOILER AT McCARRON LAKE PUMPING STATION.

One of the old boilers at the McCarron lake pumping plant having been removed to the Centerville lake plant, a contract was let to John Kenny for a new boiler at the McCarron lake pumping station. The specifications called for a tubular boiler, sixty-six inches in diameter and eighteen feet long, and so constructed as to carry a steam pressure of 125 pounds to the square inch. The contract has been completed, and the boiler is in use. When a new 10,000,000 gallon engine is erected as contemplated, it will be necessary to provide another boiler of equal capacity.



## TEN MILLION GALLON ENGINE.

Specifications have been prepared for a 10,000,000 gallon engine at McCarron lake station to take the place of the 1,500,000 gallon engine sold to the park board. This is rendered necessary by the increase of the water consumption, and I trust that your honorable body will take immediate steps to let a contract for the same, as it will require at least eight months before the engine can be erected.

## SURVEYS.

In addition to the survey work for making the plans and specifications for the various contracts let this year, a survey has also been made of the meadow land that would be affected by a rise of the Rice lakes to elevation 190, which has been done to answer suits which have been brought against the Board of Water Commissioners for the flowage of land; and the results of the survey show that there has been no damage whatever done by any action taken by the Board of Water Commissioners in putting in a flume at Baldwin lake for the measurement of the water.

## WATER CONSUMPTION.

The usual record has been kept of the amount of water used, both on the high and low service and from the various sources of supply, all of which is shown in the accompanying table, which gives, by month, a report of the amount of water consumed and the source of supply from which the water is taken.

## COST OF PUMPING.

A careful tabulation has been made of the cost of pumping at the several stations, which includes salaries, fuel, waste, oil, and repairs, and the following tables are submitted as giving the relative cost of running the different plants.

## PRECIPITATION, ST. PAUL, 1896.

The total precipitation from Jan. 1, 1896, to Jan. 1, 1897, was 34.73 inches, which is about 7.3 inches above the normal. Notwithstanding this large precipitation, on account of the small amount of rainfall for a series of several years, the lakes have not as yet recovered from the effects of the drouth but are in better condition than for several previous years. The precipitation of November of 5.07 inches is the largest of which we have any record, with one exception, which was November, 1857.

I submit herewith a record of the annual precipitation at St. Paul from 1837.

## RECOMMENDATIONS.

I would submit for your consideration the following recommendations of work to be done during the year 1897.

First—That a Venturi meter be put in near the terminal chamber of the conduit, to measure accurately the water furnished on the low service supply. This will give us a better check on the work of the pumps on the high service.

Second—That a weir be put in at the Vadnais lake pumping plant, in order to measure more accurately the work of the pumps, and to prevent the sand pumped from the artesian wells from getting into the conduit.

Third—That a proper connection be made between Centerville lake and Peltier lake, to enable us to utilize to better advantage the water of these two lakes in pumping over from the Rice lake system.

Fourth—That a new outlet be constructed at Pleasant lake, with a weir to measure the water taken from this lake.

Fifth—That steps be taken to purchase a dredge to be used on Centerville lake and Peltier lake, to further improve these lakes as storage reservoirs, and that the necessary land be taken about these two lakes so that the Board of Water Commissioners shall have power to hold the water at elevation 190, city base, and to control the water by a dam at the outlet of Lake Peltier.

Respectfully submitted,

L. W. RUNDLETT,  
City Engineer.

## McCARRON LAKE PUMPING STATION.

It was found that, on account of leakage in the valves of Pump No. 3, the actual amount pumped during December, 1895, and January and February, 1896, was less the quantity given in the table of water consumed by an estimated amount of 60,700,000 gallons for the three months, and this number of gallons has been deducted in the estimate below of the economical performance of the pumping plant.

Capacity of Pump No. 1.....	2,000,000 gallons
Capacity of Pump No. 2.....	3,000,000 gallons
Capacity of Pump No. 3.....	6,000,000 gallons

Total number of gallons pumped.....	1,590,824,200
Total amount of coal consumed.....	2,751,698

	Gallons.	Pounds of Coal.	No. of Gals. Per Pound of Coal.
Pumps Nos. 1 and 2.....	257,045,400	538,215	478
Pump No. 3.....	1,333,778,800	2,213,483	603

Average duty during the year for the whole plant.....	72,092,191
Average duty during the year for Engine No. 3.....	75,140,500
Average duty during the year for Engines Nos. 1 and 2.....	59,555,565

		Cost of Raising 1,000,000 Gallons 1 Foot.
Salaries for 1896.....	\$3,474.00	\$0.014599
Fuel .....	5,797.04	0.024342
Waste, oil and repairs.....	598.14	0.002511
Total .....	\$9,869.18	\$0.041452

## PUMP STATION AT BALDWIN LAKE.

		Cost of Raising 1,000,000 Gallons 1 Foot.
Salaries for 1896.....	\$1,564.70	\$0.034008
Fuel .....	1,897.88	0.041250
Waste, oil and repairs.....	48.21	0.001048
Total .....	\$3,510.79	\$0.076306

Amount of water pumped.....	1,917,058,000 gallons
428.75 cords black oak @ 1,500 pounds coal.....	643,125 coal equivalent
269.25 cords mixed wood @ 1,250 pounds coal....	336,562 coal equivalent
143.75 cords tamarack @ 1,000 pounds coal.....	143,750 coal equivalent
Duty average for the year.....	34,112,030

## WEST ST. PAUL PUMP STATION.

Amount of water pumped.....(gallons)	13,497,120
Amount of fuel consumed.....(pounds)	212,100
Average rate of pumping.....(in 24 hours)	36,877
Average duty during the year.....	11,078,774

		Cost of Raising 1,000,000 Gallons 1 Foot.
Salaries for 1896.....	\$1,430.00	\$0.50695
Fuel .....	475.17	0.16844
Waste, oil and repairs.....	49.95	0.01770
Total .....	\$1,955.12	\$0.69309

## VADNAIS PUMP STATION.

Amount of water pumped.....(gallons)	1,989,020,366
Amount of coal consumed.....(pounds)	612,614
Average duty during the year.....	49,040,178

		Cost of Raising 1,000,000 Gallons 1 Foot.
Salaries for 1896.....	\$1,147.48	\$0.03458
Fuel .....	1,380.53	0.04160
Waste, oil and repairs.....	115.50	0.00348
Total .....	\$2,643.51	\$0.07966

About twenty tons of coal have been used for construction and other purposes.

## PRECIPITATION AT ST. PAUL.

FROM DECEMBER 1, 1895, TO JANUARY 1, 1897.

1895.		1896.	
December .....	0.38	June .....	3.30
1896.		July .....	1.12
January .....	0.81	August .....	4.48
February .....	0.17	September .....	2.45
March .....	2.93	October .....	3.89
April .....	5.63	November .....	5.07
May .....	4.67	December .....	0.71





42-INCH WOODEN CONDUIT, CENTERVILLE EXTENSION.



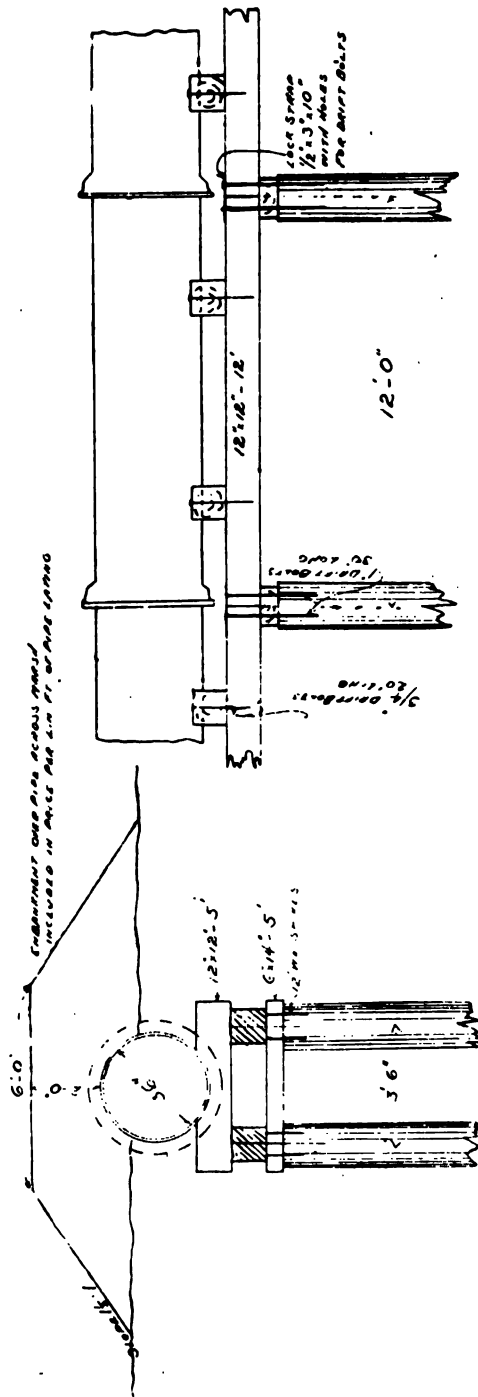
INTAKE PIPE, CENTERVILLE LAKE.





ARTESIAN WELLS, CENTREVILLE LAKE.

PLAN OF PILE FOUNDATION ACROSS MARSH, FROM STA. 5 TO STA. 17 ABOUT.

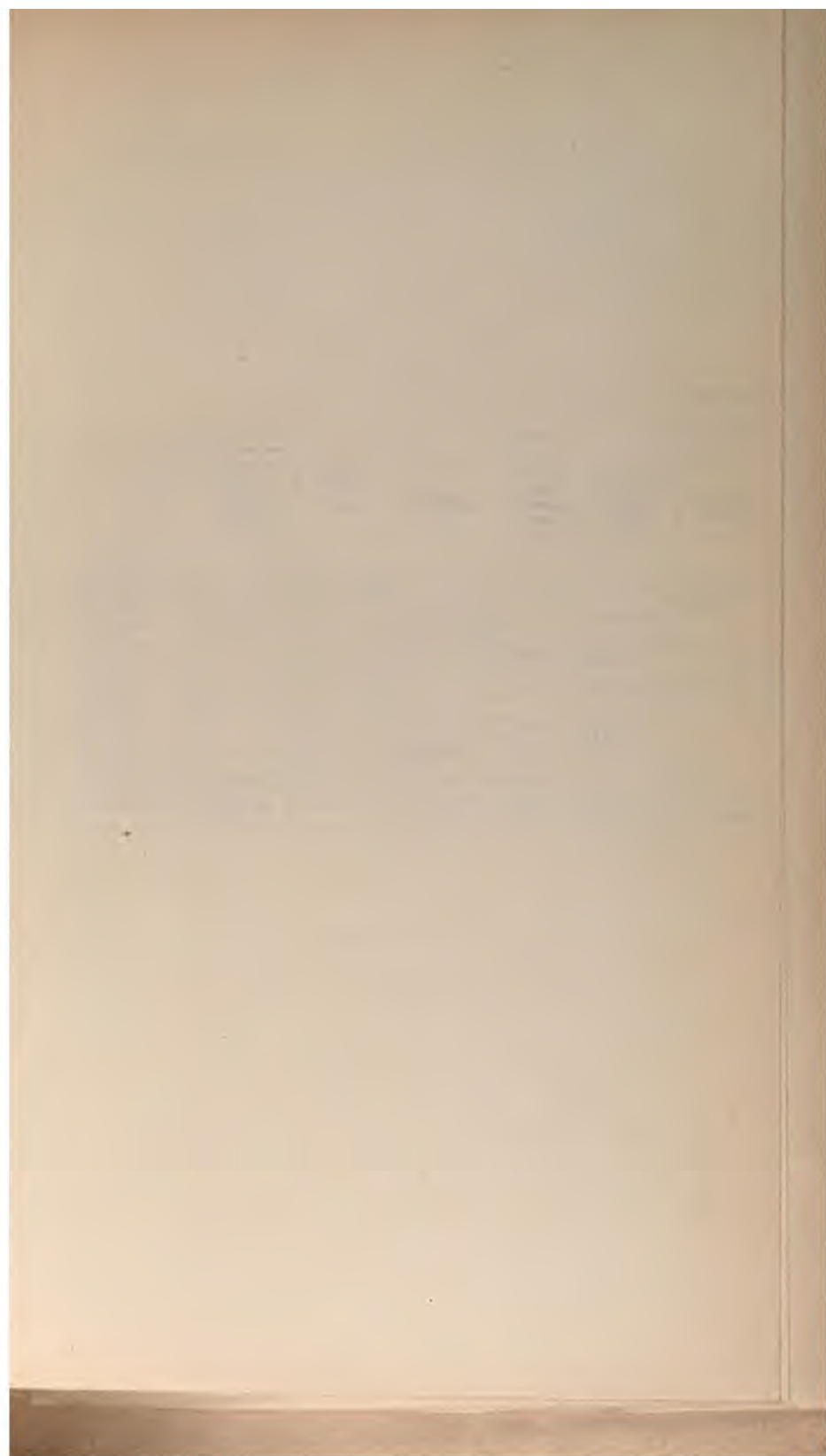


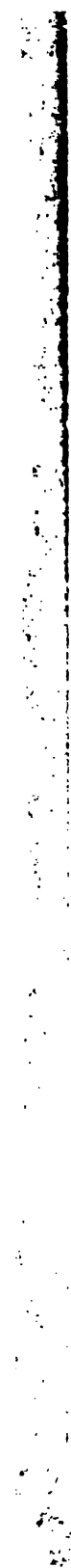




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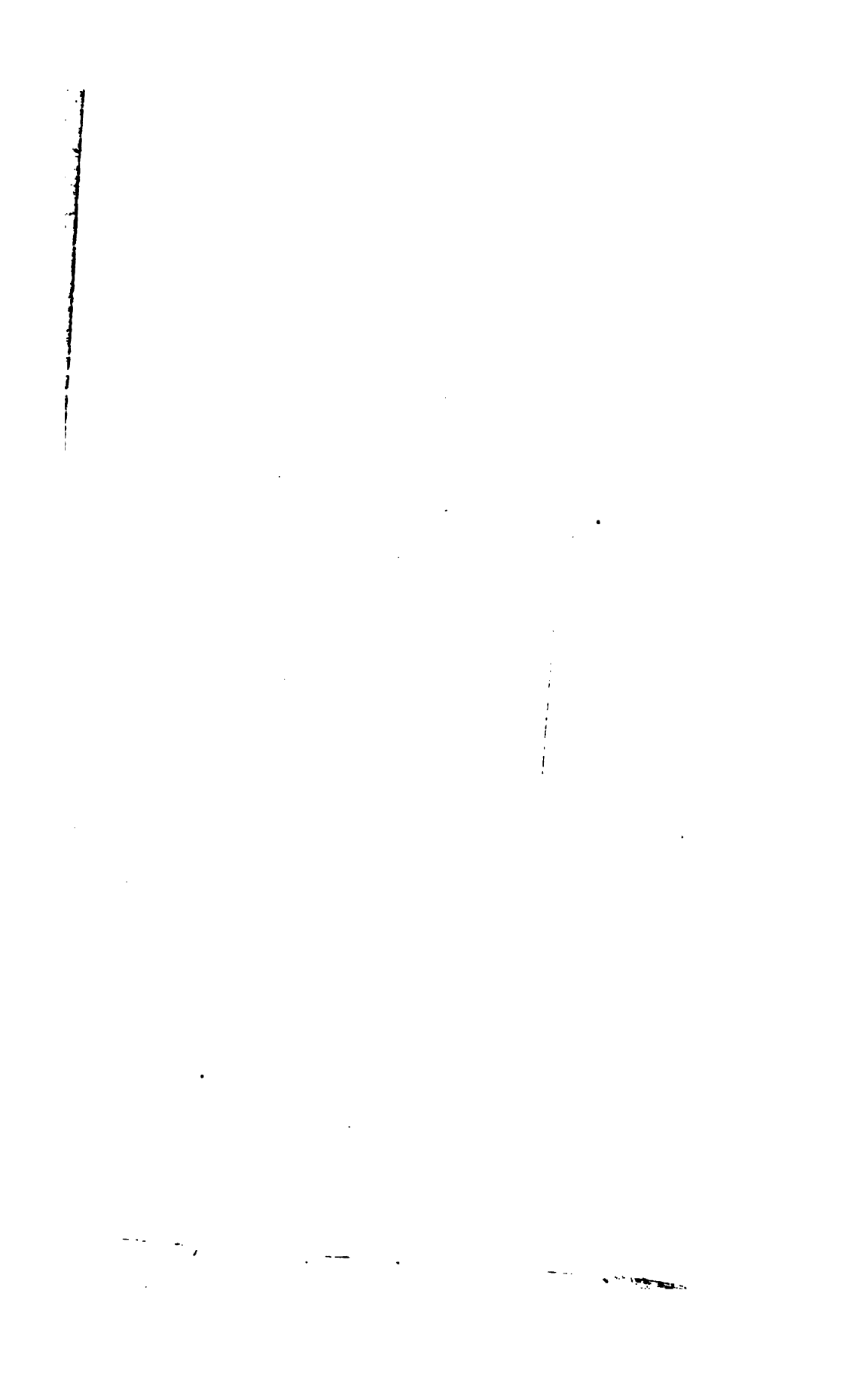


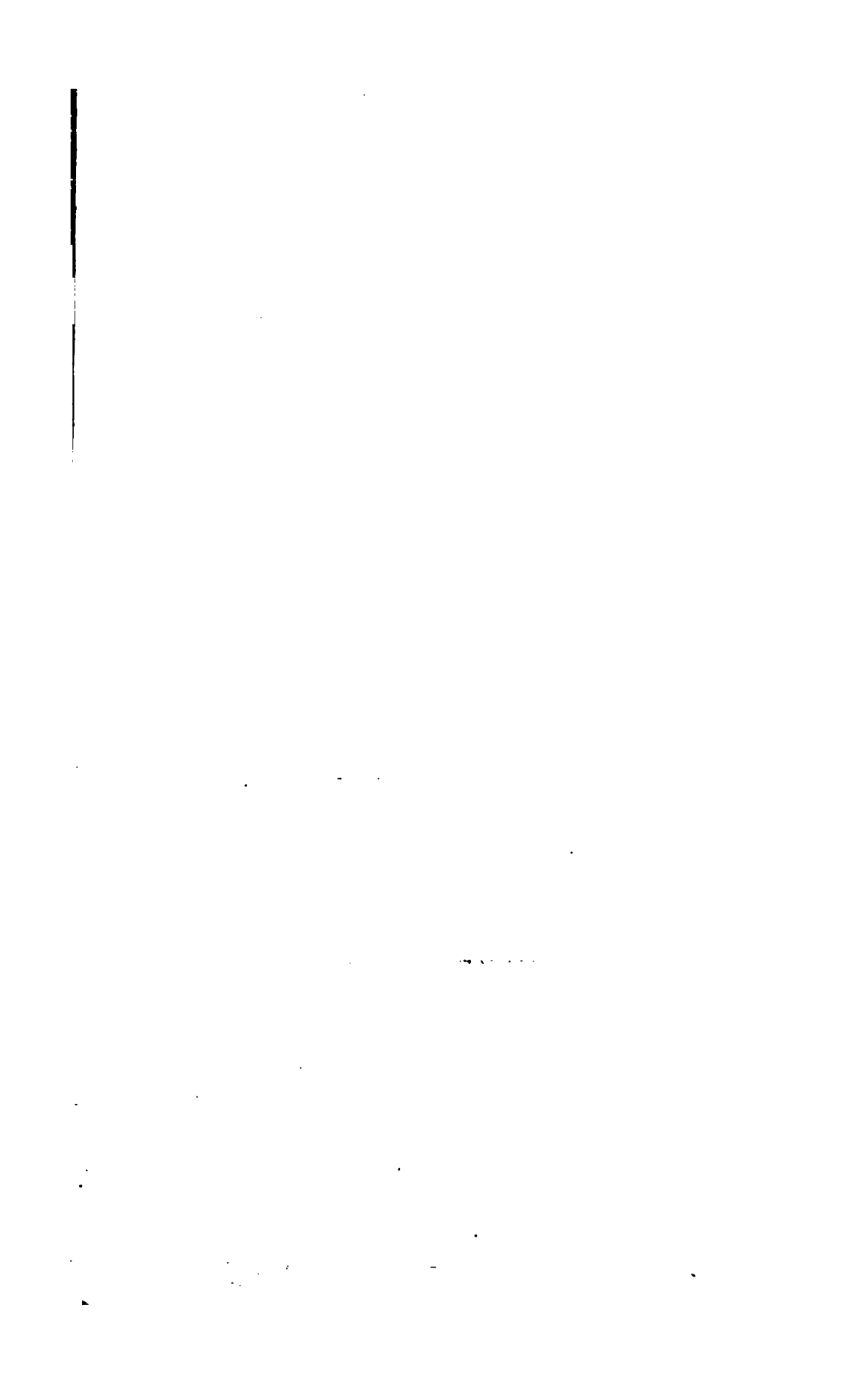












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# CHIEF ENGINEER'S REPORT.

ST. PAUL, Dec. 31, 1896.

To the President and Members of the Board of Water Commissioners:

I respectfully submit to the honorable board my twelfth annual report of the operation of the pumping station for the year ending Dec. 31, 1896.

McCarron lake station engines and boilers have not required much repairing during the year, except the 6,000,000 gallon pump replaced new, soft rubber valve, and taking one 54" x 16' boiler from this station to new Centerville lake station, and replacing one 66" x 18' boiler here.

The West Side station has been in continual operation during the year, and has not required any repairing.

The Vadnais lake new 5,000,000 gallon pump was started up last January, and has been running for the past nine months. It has given good satisfaction.

Baldwin lake station has been running for seven months, and has not required any repairing.

The Centerville lake station new 15,000,000 gallon pump was started up on December 12th.

The following tabulated record shows the operation of the different stations:

## McCarron Lake Station—

Total gallons pumped.....	1,651,524,200
Daily average pumped.....	4,170,515
Total pounds coal used.....	2,751,699
Daily average coal used.....(pounds)	6,915
Daily decrease since 1895.....(gallons)	40,204

## West Side Station—

Total number of gallons pumped.....	13,497,120
Daily average .....	34,083
Total pounds of coal used.....	212,200
Daily average coal used.....	535
Daily increase since 1895.....	5,235

## Vadnais Lake Station—

Total number of gallons pumped.....	1,056,878,516
Daily average gallons pumped.....	4,779,009
Total pounds of coal used.....	612,614
Daily average pounds of coal used.....	2,740

## Baldwin Lake Station—

Total number of gallons pumped.....	1,917,058,000
Daily average .....	9,271,715
Total cords of wood burned.....	841.75
Daily average wood.....	4.30

Respectfully submitted,

MARTIN FEIST,  
Chief Engineer.

**ST. PAUL WATER WORKS' PUMPING STATION, WEST SIDE.**  
**ENGINEER'S REPORT FOR THE YEAR ENDING DECEMBER 31, 1896.**

Months.	Number of Hours Pumped.	Total Number of Revolu- tions.	Total Number of Gallons Pumped.	Average Per Day Pumped.	Total lbs. of Coal Used.	Average lbs. Coal Per Day.	Pressure, lbs.
1895. December .....	17.	42,410	763,380	24,625	15,650	505	.....
1896. January .....	21.57	53,670	960,060	31,163	18,050	582	.....
February .....	14.35	35,950	647,100	22,313	15,100	520	.....
March .....	13.29	33,150	596,700	19,248	14,800	477	.....
April .....	16.53	42,230	760,680	25,356	13,200	440	.....
May .....	28.13	61,100	1,090,800	35,477	15,100	487	.....
June .....	46.3	90,750	1,633,500	54,450	17,900	596	.....
July .....	42.52	108,230	1,948,140	62,843	19,700	635	.....
August .....	37.56	96,580	1,738,440	56,078	18,600	600	.....
September .....	24.56	63,240	1,138,320	37,344	15,600	520	.....
October .....	26.10	66,560	1,198,080	38,647	16,050	517	.....
November .....	14.5	35,610	640,980	21,366	15,600	520	.....
December .....	8.11	20,330	365,940	11,804	16,750	540	.....
<b>Total .....</b>	<b>302.2</b>	<b>749,840</b>	<b>13,497,120</b>	<b>33,821</b>	<b>212,100</b>	<b>535</b>	<b>91</b>

Total number of gallons pumped .....13,497,120  
Daily average..... 83,821  
Total pounds of coal used..... 212,100  
Daily average..... 535  
Daily increase since 1895..... 5,235

## ST. PAUL WATER WORKS' PUMPING STATION, BALDWIN LAKE.

ENGINEER'S REPORT FOR YEAR ENDING DECEMBER 31, 1896.

Months.	No. of Hours Pumped	Total Number of Revolu- tions.	Total Num- ber of Gal- lons Pumped.	Daily Average Gallons Pumped.	Total Cords Wood Used.	Daily Aver- age Cords.	Pres- sure in Feet.
1895.							
December.....	737	521.700	81,385.200	2,625.320	56.50	1.75	26,429
1896.							
January.....							
February.....							
March.....							
April.....							
May.....	499	932.000	212,496.000	10,104.571	89	4.25	
June.....	716½	1,393.500	317,718.000	10,590.600	127	4.25	
July.....	730	1,415.000	323,711.200	10,410.038	136.75	4.38	
August.....	733½	1,415.700	322,779.600	10,412.245	138	4.45	
September.....	711	1,343.790	305,363.600	10,212.120	137	4.33	
October.....	690	1,286.400	293,299.200	9,461.263	132	4.25	
November.....	144	268.900	61,305.200	10,217.533	25.50	4.16	
December.....							
Total .....	4,941	8,576.900	1,917,058.000	9,271.715	841.75	4.30	26,429

Total number of gallons pumped .....	1,917,058,000
Daily average.....	9,271,715
Total cords wood burned.....	841.75
Daily average cord wood.....	4.30
Average water pressure on discharge and suc- tions .....	26,429 ft.



## ST. PAUL WATER WORKS' PUMPING STATION, VADNAIS LAKE.

ENGINEER'S REPORT FOR THE YEAR ENDING DECEMBER 31, 1896.

MONTHS.	No. of Hours Pumped.	Total Number of Revolu- tions.	Total Number of Gallons Pumped.	Average Per Day Pumped.	Total Lbs. of Coal Used.	Average Coal Used Per Day.	Average Pressure on Suct'n.
1896.							
January.....	6,913/4	1,453,841	127,038,064	4,127,034	72,244	2,330	.....
February.....	3,361/4	1,552,621	136,630,648	4,711,401	72,900	2,514	.....
March.....	702	1,650,888	146,052,544	4,711,373	81,500	2,629	.....
April.....	599	1,405,431	123,677,928	4,947,117	75,790	3,031	.....
May.....							.....
June.....							.....
July.....	224	528,082	46,521,016	5,145,000	27,300	2,720	.....
August.....	738 3/4	1,743,183	153,400,104	4,948,616	89,200	2,978	.....
September.....	604	1,643,083	144,591,304	4,819,710	87,000	2,900	.....
October.....	680	1,627,178	143,191,664	4,619,066	86,700	2,793	.....
November.....	105	396,278	34,872,244	4,981,749	20,060	2,893	.....
December.....							.....
Total .....	4,765	12,009,985	1,056,878,516	4,779,009	612,614	2,740	10 lbs

Total number of gallons pumped .....	1,056,878,516
Daily average gallons pumped .....	4,779,009
Total pounds of coal used.....	612,614
Daily average pounds of coal used .....	2,740
Average pressure on suction.....	10 lbs.

## ST. PAUL WATER WORKS' PUMPING STATION, McCARRON LAKE.

ENGINEER'S REPORT FOR YEAR ENDING DEC. 31, 1896.

MONTHS.	NUMBER OF HOURS PUMPED.			NUMBER OF REVOLUTIONS.			NUMBER OF GALLONS PUMPED.				Total per Month Pumped, Engines Nos. 1, 2 and 3.	Average per day Pumped.	Total Pounds of Coal Used per Month.	A. V. lbs. of Coal Used per Day.	Water Pressure in Feet.
	Engine No. 1.	Engine No. 2.	Engine No. 3.	Engine No. 1.	Engine No. 2.	Engine No. 3.	Engine No. 1.	Engine No. 2.	Engine No. 3.						
1895.															
December.			741			955,700					136,065,100		218,693	7,053	157
1896.															
January.	7		714	9,800		1,022,800	313,600			146,290,400	146,290,400	4,718,077	238,010	7,714	160
February.	60	613	644	144,800	1,368,700	948,900	4,633,000	93,071,600		135,692,700	135,692,700	4,089,872	221,063	7,023	160
March.	89	652	124	224,900	1,456,700	160,000	7,196,800	99,068,000		22,965,800	22,965,800	3,892,613	241,313	7,781	157
April.		298	430		649,700			44,179,000				3,541,746	218,807	7,293	150
May.						573,700						4,071,571	217,192	7,006	153
June.						983,600						4,688,493	210,369	7,010	157
July.	9	53	672	20,200	116,900	1,028,800	646,400	7,948,200		147,118,400	147,118,400	5,023,000	223,056	7,318	165
August.						1,003,500				143,500,500	143,500,500	4,629,048	216,063	6,969	156
September.			720			853,000				122,285,000	122,285,000	4,075,500	190,281	6,342	150
October.			722			827,200				118,280,000	118,280,000	3,815,793	189,547	6,114	145
November.			717			713,500				102,316,500	102,316,500	3,410,550	178,691	5,976	144
December.			676			676,300				96,710,900	96,710,900	3,119,061	178,698	5,763	143
Total.	165	1,616	7,577	390,700	3,592,000	7,751,600	12,790,400	244,255,000	1,594,478,800	1,651,524,200	1,651,524,200	4,170,515	2,751,699	6,915	157

Total gallons pumped..... 1,651,524,200  
 Daily average pumped..... 4,170,515  
 Total pounds coal used..... 2,751,699  
 Daily average coal used..... 6,915  
 Daily decrease since 1895—gallons..... 40,204

MARTIN FEIST,

Chief Engineer.

# CITY TREASURER'S REPORT.

OFFICE OF THE CITY TREASURER,

ST. PAUL, MINN., Feb. 26, 1897.

*To the Honorable the President and Members of the Board of Water Commissioners,*

GENTLEMEN: I have the honor to submit to you the following report of the receipts and disbursements of the Water Department Fund and the Water Department Sinking Fund for the fiscal year ending Dec. 31, 1896.

Respectfully,

C. L. HORST,

*City Treasurer.*

Balance on hand Dec. 1, 1895..... \$48,671.22

Cash received from John Caulfield—

Dec. 7, 1895.....	\$1,000.00
Dec. 10, ".....	1,000.00
Dec. 11, ".....	2,000.00
Dec. 14, ".....	1,000.00
Dec. 19, ".....	2,500.00
Dec. 26, ".....	1,000.00
Dec. 27, ".....	1,000.00
Jan. 7, 1896.....	10,000.00
Jan. 10, ".....	5,000.00
Jan. 14, ".....	5,000.00
Jan. 17, ".....	1,000.00
Jan. 18, ".....	1,000.00
Jan. 22, ".....	2,000.00
Jan. 29, ".....	1,000.00
Jan. 31, ".....	1,000.00
Feb. 6, ".....	5,000.00
Feb. 10, ".....	1,000.00
Feb. 13, ".....	2,000.00
Feb. 17, ".....	1,000.00
Feb. 19, ".....	1,000.00
Feb. 21, ".....	1,000.00
Feb. 24, ".....	1,000.00
Feb. 25, ".....	2,000.00
Feb. 28, ".....	2,000.00
Feb. 29, ".....	4,000.00
Mar. 7, ".....	10,000.00
Mar. 10, ".....	10,000.00
Mar. 12, ".....	2,000.00
Mar. 13, ".....	2,000.00
Mar. 17, ".....	2,000.00
Mar. 17, " Frontage tax.....	14,435.28
Mar. 21, ".....	1,000.00

## OF THE CITY OF ST. PAUL, FOR 1896.

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Mar. 23, 1896.....	2,000.00
Mar. 26, ".....	1,000.00
Mar. 28, ".....	1,000.00
Mar. 31, ".....	1,000.00
April 4, ".....	2,000.00
April 8, ".....	1,000.00
April 10, ".....	1,000.00
April 15, ".....	1,000.00
April 21, ".....	1,000.00
April 23, ".....	1,000.00
April 27, ".....	1,000.00
May 1, ".....	2,000.00
May 8, ".....	1,000.00
May 9, ".....	1,000.00
May 13, ".....	1,000.00
May 16, ".....	1,000.00
May 21, ".....	1,000.00
May 25, ".....	1,000.00
June 4, ".....	1,000.00
June 9, ".....	1,000.00
June 10, ".....	1,000.00
June 13, ".....	1,000.00
June 16, ".....	1,000.00
June 19, ".....	1,000.00
June 22, ".....	1,000.00
June 24, ".....	500.00
June 26, ".....	1,000.00
June 29, ".....	1,000.00
July 1, ".....	1,500.00
July 8, ".....	10,000.00
July 11, ".....	5,000.00
July 14, ".....	5,000.00
July 16, ".....	5,000.00
July 18, ".....	2,000.00
July 21, ".....	2,000.00
July 22, ".....	1,000.00
July 24, ".....	1,000.00
July 29, ".....	1,000.00
July 29, " Paving Seventh street.....	25.48
July 31, ".....	500.00
Aug. 1, " Frontage tax.....	103,947.13
Aug. 6, ".....	1,000.00
Aug. 7, ".....	1,000.00
Aug. 8, ".....	1,000.00
Aug. 11, ".....	1,000.00
Aug. 13, ".....	1,000.00
Aug. 15, ".....	1,000.00
Aug. 22, ".....	4,000.00
Aug. 27, ".....	1,000.00
Aug. 28, ".....	1,000.00
Aug. 29, ".....	2,000.00
Aug. 19, ".....	1,000.00
Sept. 1, ".....	2,500.00
Sept. 9, ".....	20,000.00
Sept. 11, ".....	2,000.00
Sept. 14, ".....	4,000.00
Sept. 17, ".....	2,000.00
Sept. 18, ".....	1,000.00
Sept. 19, ".....	1,000.00



Sept. 22, 1896.	1,000.00
Sept. 25, "	1,000.00
Sept. 26, "	2,000.00
Sept. 30, "	1,000.00
Oct. 1, "	500.00
Oct. 7, "	1,000.00
Oct. 10, "	1,000.00
Oct. 13, "	1,000.00
Oct. 17, "	1,000.00
Oct. 19, "	1,000.00
Oct. 20, "	1,000.00
Oct. 26, "	1,000.00
Oct. 29, "	1,000.00
Oct. 30, "	600.00
Nov. 2, "	1,000.00
Nov. 7, "	2,000.00
Nov. 11, "	1,000.00
Nov. 18, "	4,790.07
Nov. 19, "	1,000.00
Nov. 21, "	1,000.00
Nov. 28, "	1,000.00
Dec. 8, "	1,000.00
Dec. 9, "	1,000.00
Dec. 12, "	1,000.00
Dec. 14, "	1,000.00
Dec. 16, "	1,000.00
Dec. 17, "	1,000.00
Dec. 26, "	1,000.00
Dec. 29, "	745.45
	<hr/>
	\$395,214.63

## DISBURSEMENTS.

December, 1895.	\$15,356.73
January, 1896.	18,611.48
February, "	17,931.81
March, "	31,009.10
April, "	14,121.47
May, "	14,536.51
June, "	14,952.20
July, "	59,593.83
August, "	41,007.89
September, "	48,926.05
October, "	47,440.66
November, "	39,088.85
December, "	20,358.13
	<hr/>
	\$383,024.71
Balance Jan. 1, 1897.	12,189.92
	<hr/>
	\$395,214.63

## WATER DEPARTMENT SINKING FUND.

By balance Dec. 1, 1895.	\$140,910.67
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## RECEIPTS.

Dec. 12, 1895.	By certificates of indebtedness department.	\$2,012.50
Jan. 17, 1896.	By certificates of indebtedness department.	2,825.00
Mar. 13, 1896.	By certificates of indebtedness department.	62.50

May 26, 1896.	By cash.....	88,500.00
May 26, 1896.	By cash.....	2,179.22
July 16, 1896.	By cash.....	110,603.45
July 16, 1896.	By certificates of indebtedness department....	2,910.00
Aug. 15, 1896.	By certificates of indebtedness department....	600.00
Oct. 14, 1896.	By cash.....	15,000.00
Oct. 15, 1896.	By certificates of indebtedness department....	1,180.00
Nov. 13, 1896.	By general fund.....	1,203.08
Dec. 16, 1896.	By certificates of indebtedness department....	290.00

## DISBURSEMENTS.

Jan. 20, 1896.	Sundries .....	\$145,500.00	
Jan. 27, 1896.	Certificates of indebtedness dept..	194.97	
May 26, 1896.	Sundries .....	89,803.33	
July 14, 1896.	Sundries .....	111,500.00	
July 27, 1896.	Sundries .....	3,032.33	
Oct. 13, 1896.	Sundries .....	1,464.97	
Oct. 13, 1896.	Sundries .....	14,690.11	
Balance on hand Jan. 1, 1897.....		2,090.71	
		<hr/>	
		\$368,276.42	\$368,276.42



M. W. Baker

1897

SIXTEENTH ANNUAL REPORT

OF THE

BOARD

OF

WATER COMMISSIONERS

OF THE

CITY OF ST. PAUL.

JANUARY 1, 1898.

ST. PAUL, MINN.:  
THE PIONEER PRESS COMPANY.  
1898.





**SIXTEENTH ANNUAL REPORT**

**OF THE**

**BOARD**

**OF**

**WATER COMMISSIONERS**

**OF THE**

**CITY OF ST. PAUL.**

**JANUARY 1, 1898.**

**ST. PAUL, MINN.:  
THE PIONEER PRESS COMPANY  
1898.**

**OFFICERS**  
**OF THE**  
**CITY WATER WORKS.**  
**JANUARY 1, 1898.**

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**BOARD OF WATER COMMISSIONERS.**

**R. B. C. BEMENT, President. Term expires Jan. 1, 1901.**  
**JOHN H. WOLTERSTORFF. Term expires Jan. 1, 1901.**  
**J. F. HOYT. Term expires Jan. 1, 1900.**  
**P. W. HUDNER. Term expires Jan. 1, 1902.**  
**THOS. GRACE. Term expires Jan. 1, 1899.**

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**JOHN CAULFIELD, Secretary.**  
**A. R. STARKEY, Superintendent.**  
**L. W. RUNDLETT, City Engineer and Engineer of the Board.**  
**MARTIN FEIST, Chief Engineer and Engineer of McCarron Lake Station.**  
**M. THOMMES, Assistant Engineer of McCarron Lake Station.**  
**H. GEISLER, Gate Keeper and Engineer of Vadnais Lake Station.**  
**A. A. THOMPSON, Assistant Engineer of Vadnais Lake Station.**  
**JACOB ABRESCH, Engineer of Centerville Station.**  
**JOS. DOERR, Engineer of West St. Paul Station.**  
**FRANK GALLOWAY, Assistant Engineer of West St. Paul Station.**  
**GEO. DOORLEY, Meter Inspector.**

SIXTEENTH ANNUAL REPORT  
OF THE  
BOARD OF WATER COMMISSIONERS  
OF THE  
CITY OF ST. PAUL, MINN.

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OFFICE OF THE BOARD OF WATER COMMISSIONERS,  
ST. PAUL, MINN., Jan. 1, 1898.

*To the Honorable Mayor and Common Council of the City of St. Paul:*

GENTLEMEN: The Board of Water Commissioners of the City of St. Paul presents herewith its sixteenth annual report, covering the twelve months ending December 31st, 1897. The previous report of this department covered a period of thirteen months, from December 1st, 1895, to December 31st, 1896, to make the fiscal year of the Board of Water Commissioners conform with that of the other departments of the City, and this must be borne in mind if comparisons of the totals of this year are made with those of last year.

In our report last year your attention was called to the discrepancy between the total cost of the water works as given by the City Comptroller and that which is shown by the figures of actual cost taken from our books. In the Report of the Comptroller of the City of St. Paul, dated December 31st, 1896, the water works are put in at a cost of five million one hundred twenty-nine thousand seven hundred and seventy (\$5,129,770) dollars. In the next annual report, for the year ending December 31st, 1897, in the statement of the assets and liabilities of the city (Exhibit No. 7), the water works are put in at the same figure, viz.: five million, one hundred twenty-nine thousand seven hundred and seventy (\$5,129,770) dollars, when in actual fact, during the year there has been expended fifty-six thousand eight hundred and one dollars and eighty-eight cents (\$56,801.88) for extensions, machinery, distribution mains, meters, etc., less credits for old material sold, and that amount should have been added to the cost of the works given last year. The sinking fund this year has been increased by cash seventy-five thousand dollars (\$75,000), and interest earnings twenty thousand nine hundred and thirty-four dollars and thirty-seven cents (\$20,934.37), making a total of four hundred and sixty-one



thousand five hundred and twenty-five dollars and eight cents (\$461,525.08) in Water Department sinking fund to date; and the total cost of the works to the city, January 1st, 1888, is three million, eight hundred fifteen thousand six hundred and sixty-one dollars and sixteen cents (\$3,815,661.16). This matter is brought up only for the purpose of explaining the discrepancy of one million three hundred fourteen thousand one hundred and eight dollars and eighty-four cents (\$1,314,108.84) between the actual cost of the works to the city and that stated by the City Comptroller, that it may be a matter of record, and accounted for when both reports are printed together in the single volume of the annual reports of the city for the year.

In the report of the City Engineer, herewith appended, you will notice that the average rainfall for the year ending December 31st, 1897, was 30.52 inches, or 3.07 inches greater than the average rainfall up to December 31st, 1896, and 4.21 inches less than the rainfall of the previous year. The rainfall for the year just ended, by months, was generally below the average, but the months of June and July were very large, and greatly in excess of the monthly average, occurring most opportunely, as it filled our lakes nearly to the overflowing point just before the period when our greatest drain upon them began. And for this reason we were not obliged to use our reserve supply, and practically our Centerville and Baldwin Lake plants were not used during the year, except occasionally for testing purposes.

The quality of the water was very satisfactory this year, a fact confirmed by the analyses of the water and the comparatively few complaints from the consumers.

A break occurred in the old force main extending from the McCarron Lake pumping station to the High Service reservoir, on the Rice street embankment, where we had so much trouble last year, but this break was discovered immediately, water was shut off, and very little damage occurred. The necessity for, and the advantage of, having this auxiliary force main to the reservoir was shown. This main was completed early in the Spring and its value was thus demonstrated.

Your attention is called to the increase in the number of water meters in use, fully fifty (50) per cent, and a continuation of the policy of increasing the use of meters is urged. In the Engineer's report this subject has been investigated, and at the end of the present year we hope to have the figures to show more accurately the amount of water required in this locality per capita. From what we have already compiled, it is shown that only about thirty-five (35) gallons are used per capita, as against fifty (50) gallons and upwards, as shown by the unmetered consumers of water.

Since the reduction in the charges for water to both metered and unmetered consumers, seven months only of this year, were affected by the reduction. Six months unmetered consumers, and eight months metered consumers, show a surplus of seven thousand nine hundred and thirty-five dollars and twenty-nine cents (\$7,935.29), over the cost to the depart-

ment to furnish the water, and it is estimated that the full twelve months showing of these reduced rates would make the net expenditures and net receipts about even, leaving nothing for betterments or extensions, and this leaves available only the frontage tax to pay for the extensions, distribution mains, and increase in machinery, which is equitable and as it should be, as the parties who now are getting the benefits of these extensions are the ones who are now paying for them.

Your plant is in excellent condition, in full repair, and when the new ten-million gallon pump is installed at the McCarron Lake station, there will be no need of any increase in machinery for many years to come.

R. B. C. BEMENT,  
THOMAS GRACE,  
P. W. HUDNER,  
JNO. H. WOLTERSTORFF,  
J. F. HOYT.

# SECRETARY'S REPORT.

OFFICE OF THE BOARD OF WATER COMMISSIONERS,  
ST. PAUL, MINN., Jan. 1, 1898.

*To the Board of Water Commissioners,*

GENTLEMEN: I herewith submit my sixteenth annual report, with accompanying statements and tables, showing in detail under appropriate headings the financial operations of the Water Department for the year ending Dec. 31, 1897; also, comparative statements of receipts and disbursements from Aug. 10, 1882 (the time of the purchase of the works by the city), to date.

## REVENUE. (See Table No. 2.)

Balance on hand Jan. 1, 1897.....		\$10,058.17
General water receipts.....	\$170,796.35	
Miscellaneous water receipts.....	14,265.85	
Connections (street services).....	9,174.09	
Extensions .....	1,627.12	
Construction (new supply).....	2,000.00	
Frontage tax .....	106,448.35	
Shutting off and turning on water.....	29.00	
Sinking fund earnings.....	21,759.17	
Sinking fund .....	824.80	
Meter .....	87.01	
		<hr/>
		327,011.74
Total .....		<hr/>
		\$337,069.91

## DISBURSEMENTS. (See Table No. 2.)

General maintenance .....	\$37,105.41	
Connection (street services).....	10,015.19	
Repairs .....	2,408.63	
Meters .....	9,324.50	
Extensions .....	23,305.72	
Construction .....	27,885.79	
Interest .....	114,200.00	
Frontage tax refunded.....	136.27	
Sinking fund .....	96,759.17	
Sinking fund earnings.....	824.80	
		<hr/>
		\$321,965.48
Balance .....		<hr/>
		\$15,104.43

The general water receipts, including high and low service and meters, for the year were one hundred and seventy thousand seven hundred and ninety-six dollars and thirty-five cents (\$170,796.35). The last report, dated Jan. 1, 1897, was for a period of thirteen months, and it was made to conform with the fiscal year of the other departments of the city, and for the purpose of comparing the receipts of 1896-97 we will deduct the receipts for the month of December, 1896, which amount to five thousand five hundred and fifty-three dollars and sixty-one cents (\$5,553.61). After this deduction the receipts for 1897 as compared with those of 1896 show a decrease of fourteen thousand three hundred and sixty-four dollars and eighty-two cents (\$14,364.82), of which three thousand six hundred and seventy-one dollars and seventeen cents (\$3,671.17) was on low service, six thousand two hundred and eighty-two dollars and twenty-eight cents (\$6,282.28) on high service, and four thousand four hundred and eleven dollars and thirty-seven cents (\$4,411.37) on meter consumers. This decrease was caused by the reduction of water rates, which went into effect with meter consumers on May 1, 1897, low service consumers July 1st, and high service consumers September 1st.

Extension account is credited with one thousand six hundred and twenty-seven dollars and twelve cents (\$1,627.12), derived as follows:

Condemned water pipe.....	\$297.41
Cast iron water pipe.....	269.85
For putting in large services for automatic fire extinguishers..	874.41
For putting in large service connections.....	43.40
For labor furnished contractors in paving streets, etc.....	64.45
Scrap iron, old brass, etc.....	77.60
Total .....	\$1,627.12

Construction account is credited with two thousand dollars, derived from the sale of the small Allis engine, which was sold to the Board of Park Commissioners.

#### INTEREST ACCOUNT.

One hundred and fourteen thousand two hundred dollars, being interest on the bonded debt, has been paid from the earnings of the works.

#### REPAIR ACCOUNT.

Two thousand four hundred and eight dollars and sixty-three cents (\$2,408.63) was paid on this account, of which one thousand eight hundred and twenty-five dollars and twenty-one cents (\$1,825.21) was on account of fire hydrants, two hundred and one dollars and twenty-six cents (\$201.26) on account of valves, and three hundred and eighty-two dollars and sixteen cents (\$382.16) on account of mains.



## GENERAL MAINTENANCE ACCOUNT.

Thirty-seven thousand one hundred and five dollars and forty-one cents (\$37,105.41) was paid on this account. The expense of maintaining the five pumping stations and Dale street reservoir was thirteen thousand nine hundred and sixty-one dollars and seventy-eight cents (\$13,961.78) (see Table No. 13), of which six thousand nine hundred and fifty-seven dollars and fifty cents (\$6,957.50) was for salaries, six thousand four hundred and ninety-three dollars and ninety-seven cents (\$6,493.97) for fuel, two hundred and eighty-five dollars and thirty-two cents (\$285.32) for waste and machine oils, one hundred and ninety-four dollars and four cents (\$194.04) for supplies and repairs, and thirty-dollars and ninety-five cents (\$30.95) for kerosene oil, leaving a balance of twenty-three thousand one hundred and forty-three dollars and sixty-three cents for salaries and labor of all the officers, employes, office expenses, fuel and all other expenses necessary for maintaining the works. (See Table No. 17 for comparative statements of the expenses of maintaining the pumping stations and reservoirs for the past seven years.)

## EXTENSION ACCOUNT.

Twenty-three thousand three hundred and five dollars and seventy-two cents (\$23,305.72) was paid on account of city extensions, of which eight thousand seventy-seven dollars and eleven cents (\$8,077.11) was for pipe and specials; ten thousand two hundred and eighteen dollars and sixty-nine cents (\$10,218.69) was for labor; and ten hundred seventy-six dollars and fifty cents (\$1,076.50) for fire hydrants; one thousand nine hundred and ninety-one dollars and sixty-nine cents (\$1,991.69) for valves, and one thousand nine hundred and forty-one dollars and seventy-three cents (\$1,941.73) for tools, lead and hemp packing, and lumber and material.

## CONSTRUCTION ACCOUNT.

Twenty-seven thousand eight hundred and eighty-five dollars and seventy-nine cents (\$27,885.79) was paid on this account. This was principally for work done on the Centerville conduit and pumping stations, and the artesian well plant at Vadnais lake station.

## PAY ROLL. (See Table No. 11.)

All of the work in laying water pipes the past season was done under contract. The putting in of service pipes, additional fire hydrants, valves and street sprinkling hydrants was done by day labor; also, considerable work at the various pumping stations, lakes and canals. The pay roll of all officers and employes for the year amounted to forty-five thousand three dollars and thirty-four cents (\$45,003.34), and the monthly average of employes has been ninety-five (95).

## SINKING FUND. (See Table No. 10.)

This fund now amounts to four hundred and sixty-one thousand five hundred and twenty-five dollars and eight cents (\$461,525.08), an increase of ninety-five thousand nine hundred and thirty-four dollars and thirty-seven cents (\$95,934.37) during the year, of which seventy-five thousand dollars was paid from the earnings of the works and twenty thousand nine hundred and thirty-four dollars and thirty-seven cents (\$20,934.37), being the interest earnings on the invested funds. Your attention is respectfully called to Table No. 10, accompanying this report, showing the sinking fund investments, date of investments, date of certificate, when due, etc.

## CONTRACTS. (See Table No. 6.)

Contracts have been let during the year amounting to sixty-one thousand three hundred and eighty-nine dollars and forty-two cents (\$61,389.42), of which twenty-eight thousand nine hundred and forty-nine dollars and thirty-five cents (\$28,949.35) has been paid, leaving a balance of thirty-two thousand four hundred and forty dollars and seven cents (\$32,440.07) to be paid when contracts are completed. On Jan. 1, 1897, date of last report, there was due on contracts not then completed the sum of nineteen thousand four hundred and two dollars and seventy-nine cents (\$19,402.79), on which seventeen thousand five hundred and two dollars and seventy-nine cents (\$17,502.79) has been paid, leaving a balance of nineteen hundred dollars (\$1,900) still due.

## BONDED DEBT. (See Table No. 7.)

No increase has been made in the bonded debt since May 1, 1890. The present bonded debt is two million four hundred and sixty thousand dollars (\$2,460,000), the annual interest of which is one hundred and fourteen thousand two hundred dollars (\$114,200), and is paid from the revenue of the works.

## FRONTAGE TAX. (See Table No. 9.)

There has been collected during the year by the County Treasurer one hundred and six thousand four hundred and forty-eight dollars and thirty-five cents (\$106,448.35) on account of frontage tax. Your attention is called to Table No. 9, accompanying this report, showing in detail the collections, balances, etc., for the various years this assessment has been made.

Your attention is also called to Table No. 19, showing the number of miles of mains laid annually since Aug. 10, 1882 (when the city purchased the works), the cost of same, expenditures for construction outside of city limits, annual maintenance, number of taps, annual receipts from the consumers, and the annual increase from same, frontage tax receipts and assessments, the number of miles of mains that will be dropped annually

from the frontage tax assessments under the law passed by the legislature in 1895 exempting property in front of which water mains are laid from further assessments after having paid ten years. From this table it appears that property in front of eighty-six miles of mains is already exempt and that twenty and one-half miles additional will be exempt upon the payment of the 1897 tax.

#### METERS.

There are now in service 2,300 meters, an increase of 754 during the year, of which the department owns 2,250 and the consumers 50. Eight hundred and fifty-five meters were tested during the year. The board, to encourage the general use of meters, still adheres to the practice of making no charge to the consumer for setting them.

#### SERVICES. (See Table No. 12.)

During the year four hundred and thirty applications have been made for service connections, of which three hundred and thirty-two (332) were on high service and ninety-eight (98) on low service. Total number of applications to date fifteen thousand two hundred and twelve (15,212), of which eight thousand eight hundred and twenty-nine (8,829) are on high service and six thousand three hundred and eighty-three (6,383) on low service. There were but two thousand and twelve (2,012) applications, and all on low service, when the city purchased the works in 1882.

#### PLUMBING AND INSPECTION. (See Table No. 18.)

Forty-seven plumbers were granted licenses during the year, and 1,060 permits were issued to them to do work in connection with the introduction and extension of water services, as against 1,173 in 1896, 1,770 in 1895, 1,065 in 1894, 1,362 in 1893, 1,649 in 1892, 1,991 in 1891, 2,182 in 1890, 2,424 in 1889, 1,707 in 1888, 1,610 in 1887, 1,497 in 1886, 1,454 in 1885, and 718 in 1884. In addition to the inspection and examination of all the work done by licensed plumbers there were 1,080 special inspections, of which 525 were on high service and 555 on low service. All these special inspections were made at the request of consumers, for change of rate.

Table No. 18 shows the character and number of hose violations reported to this department during the past season, and also a comparative statement for the years 1894 to 1897, inclusive.

Respectfully submitted,

JNO. CAULFIELD,  
*Secretary.*

TABLE NO. 1.

## TRIAL BALANCE, DEC. 31, 1897.

Account.	Dr.	Cr.
St. Paul Water Works (original purchase).....	\$510,000.00	
Bond account .....		\$2,480,000.00
General water receipts.....		2,221,488.02
Miscellaneous water receipts.....		267,296.99
Connection (services) .....		5,319.19
Extension .....	1,983,305.39	
General maintenance .....	433,372.31	
Repair .....	56,100.79	
Meter .....	59,202.04	
Construction .....	1,263,153.73	
Interest .....	1,404,742.61	
General water receipts (hydrant account).....		121,663.19
Sinking fund .....	461,525.08	
Sinking fund earnings.....		67,861.89
Shutting off and turning on water.....		2,236.00
Frontage tax .....		1,040,701.10
Bank of Minnesota.....	282.10	
C. L. Horst, city treasurer.....	14,822.33	
	<hr/>	<hr/>
	\$9,180,566.38	\$9,180,566.38



TABLE NO. 2.

## RECEIPTS AND DISBURSEMENTS FROM JAN. 1, 1897, TO DEC. 31, 1897

Balance Jan. 1, 1897.....		\$10,058.1
General water receipts, high service...	\$65,864.36	
General water receipts, low service...	42,616.68	
General water receipts, meters.....	62,313.31	
	<hr/>	\$170,796.35
Miscellaneous receipts, builders.....	\$448.31	
Miscellaneous receipts, water carts...	.....	
Miscellaneous receipts, flushing sewers...	344.77	
Miscellaneous receipts, filling cisterns...	196.50	
Miscellaneous receipts, sprinkling streets .....	13,276.27	
	<hr/>	\$14,265.85
Connections—(Services) .....		9,174.09
Extension .....		1,627.12
Construction (new supply) .....		2,000.00
Frontage tax .....		106,448.35
Shutting off and turning on water....		29.00
Sinking fund earnings.....		21,759.17
Sinking fund .....		824.80
Meter .....		87.01
	<hr/>	\$327,011.7
Total receipts .....		\$337,069.1

## DISBURSEMENTS.

General Maintenance—		
Salaries .....	\$20,571.80	
Stationery and printing.....	1,833.17	
Miscellaneous .....	843.24	
Labor .....	5,897.10	
Material .....	7,701.22	
Stable—feed .....	258.84	
Stable—repairs .....	500.04	
	<hr/>	\$37,105.41
Connections—		
Labor .....	\$6,330.68	
Pipe .....	1,821.51	
Brass goods and stop boxes.....	1,521.85	
Tools and miscellaneous .....	341.15	
	<hr/>	\$10,015.19
Repairs—		
Hydrants—labor .....	\$1,735.98	
Hydrants—material .....	89.23	
Valves—labor .....	201.26	
Valves—material .....	.....	
Mains—labor .....	375.66	
Mains—material .....	6.50	
	<hr/>	\$2,406.63
Meters—		
Labor .....	\$2,661.53	
Freight and meters.....	6,662.97	
	<hr/>	\$9,324.50
Extensions—		
Pipe and special castings.....	\$8,077.11	
Labor and contracts.....	10,218.69	
Tools and repairs of same.....	211.78	
Advertising .....	18.04	
Fire hydrants .....	1,076.50	
Valves .....	1,991.69	
Lead and hemp packing.....	589.44	
Lumber and material.....	764.85	
Miscellaneous .....	357.62	
	<hr/>	\$23,305.72
Construction—New Supply—		
Pipe and special castings.....	\$732.62	
Labor and contracts.....	20,700.77	
Tools and repairs of same.....	2,001.25	
Lumber and material.....	3,231.58	
Freight .....	104.51	
Engineering and right of way.....	929.21	
Miscellaneous and building account..	185.85	
	<hr/>	\$27,885.79
Interest .....		\$114,200.00
Refunded frontage tax.....		136.27
Sinking fund .....		96,759.17
Sinking fund earnings.....		824.80
Total disbursements .....		\$321,965.4
Balance .....		\$15,104.4

TABLE NO. 3.

RECEIPTS AND DISBURSEMENTS FROM AUG. 10, 1882, TO DEC. 31, 1897.

General water receipts, high service..	\$616,393.59	
General water receipts, low service...	919,352.83	
General water receipts, meters.....	685,741.60	
	<hr/>	\$2,221,488.02
Miscellaneous receipts, builders.....	\$37,916.11	
Miscellaneous receipts, water carts...	3,796.13	
Miscellaneous receipts, flushing sewers	11,916.39	
Miscellaneous receipts, filling cisterns.	20,518.59	
Miscellaneous receipts, sprinkling streets .....	193,149.77	
	<hr/>	\$267,206.00
Connections—(Services) .....	\$301,554.56	
Extension....	32,962.85	
Interest .....	67,964.84	
Meter .....	145.61	
Frontage tax .....	1,043,389.14	
Sinking fund .....	8,775.22	
Shutting off and turning on water....	2,236.00	
Sinking fund earnings.....	73,885.33	
Repairs .....	3,259.15	
General water receipts, hydrant ac- count .....	121,663.19	
Construction .....	5,694.26	
Bills payable .....	653,000.00	
Bonds .....	2,110,000.00	
Total receipts .....	<hr/>	\$6,913,315.16

TABLE NO. III—Continued.

## DISBURSEMENTS.

<b>General Maintenance—</b>		
Salaries .....	\$235,426.87	
Stationery and printing.....	16,457.41	
Miscellaneous .....	9,225.39	
Labor .....	62,081.87	
Material .....	100,587.81	
Stable-feed .....	5,698.23	
Stable-repairs .....	3,899.73	
		\$433,372.31
<b>Connections—</b>		
Labor .....	\$189,258.78	
Pipe .....	77,851.99	
Brass goods and stop boxes.....	40,538.10	
Tools and miscellaneous .....	8,586.50	
		\$296,235.37
<b>Repairs—</b>		
Hydrants—labor .....	\$37,782.05	
Hydrants—material .....	1,818.98	
Valves—labor .....	1,450.65	
Valves—material .....	547.02	
Mains—labor .....	15,585.69	
Mains—material .....	2,255.55	
		\$59,419.04
<b>Meters—</b>		
Labor .....	\$18,965.78	
Freight and meters.....	40,381.87	
		\$59,347.65
<b>Extensions—</b>		
Pipe and special castings.....	\$1,068,796.12	
Labor and contracts .....	632,243.53	
Tools and repairs of same.....	20,058.06	
Advertising .....	352.06	
Fire hydrants .....	98,575.73	
Valves .....	79,721.22	
Lead and hemp packing.....	67,644.23	
Lumber and material .....	23,525.43	
Miscellaneous .....	25,361.84	
		\$2,016,268.24
<b>Construction—New Supply—</b>		
Pipe and special castings.....	\$187,799.33	
Labor and contracts.....	677,007.64	
Tools and repairs of same.....	7,375.90	
Lumber and material.....	93,709.18	
Freight .....	9,583.73	
Engineering and right of way.....	126,740.76	
Miscellaneous and building account..	19,148.55	
Reservoirs .....	147,484.77	
		\$1,268,847.00
Interest .....	\$1,472,707.45	
Refunded frontage tax.....	2,688.04	
Bills payable .....	653,000.00	
Bond .....	180,000.00	
Sinking fund .....	468,124.41	
Sinking fund earnings.....	7,399.33	
		\$6,898,210
Total disbursements .....		
Balance .....		\$15,104

the 1990s, the number of people in the world who are illiterate has increased from 1.2 billion to 1.5 billion. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015. The number of illiterate people in the world is expected to reach 1.7 billion by the year 2015.

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26





1. The first part of the document is a list of names and addresses of the members of the committee. The names are listed in alphabetical order, and the addresses are listed below each name. The list is as follows:

2. The second part of the document is a list of the names of the members of the committee who have been elected to the office of the chairperson. The names are listed in alphabetical order, and the office is listed below each name. The list is as follows:

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TABLE NO. 4.

STATEMENT SHOWING AMOUNT PAID THE CITY TREASURER AND WARRANTS DRAWN AGAINST SAME FROM JAN. 1, 1897, TO DEC. 1897.

2....	Balance in treasury as per last report.....		\$9,744.73
2....	Cash.....	\$3,000.00	
5....	Cash.....	6,000.00	
6....	Cash.....	6,000.00	
8....	Cash.....	5,000.00	
11....	Cash.....	3,000.00	
13....	Cash.....	1,000.00	
15....	Cash.....	1,000.00	
20....	Cash.....	1,000.00	
22....	Cash.....	1,000.00	
30....	Cash.....	2,000.00	
			\$29,000.00
4....	Cash.....	\$1,000.00	
6....	Cash.....	1,000.00	
11....	Cash.....	1,000.00	
13....	Cash.....	1,000.00	
16....	Cash.....	1,000.00	
17....	Cash.....	1,000.00	
18....	Cash.....	3,000.00	
20....	Cash.....	1,000.00	
25....	Cash.....	1,000.00	
26....	Cash.....	1,000.00	
27....	Cash.....	2,000.00	
			\$14,000.00
4....	Cash.....	\$5,000.00	
6....	Cash.....	10,000.00	
8....	Cash.....	5,000.00	
10....	Cash.....	2,000.00	
12....	Cash.....	2,000.00	
16....	Cash.....	3,000.00	
16....	From county treasurer on account of frontage tax	11,441.24	
18....	Cash.....	1,000.00	
24....	Cash.....	5,000.00	
29....	Cash.....	2,000.00	
			\$46,441.24
6....	Cash.....	\$1,000.00	
9....	Cash.....	1,000.00	
10....	Cash.....	1,000.00	
14....	Cash.....	1,000.00	
17....	Cash.....	1,000.00	
20....	Cash.....	500.00	
28....	Cash.....	1,000.00	
30....	Cash.....	1,500.00	
			\$8,000.00
1....	Cash.....	\$500.00	
6....	Cash.....	1,000.00	
7....	Cash.....	1,000.00	
8....	Cash.....	500.00	
15....	Cash.....	1,000.00	
17....	Cash.....	1,000.00	
25....	Cash.....	1,000.00	
29....	From county treasurer on account of frontage tax	15,000.00	
31....	Cash.....	500.00	
			\$21,500.00
3....	Cash.....	\$1,000.00	
5....	Cash.....	1,000.00	
7....	Cash.....	1,000.00	
9....	Cash.....	1,000.00	
15....	Cash.....	1,000.00	
16....	Cash.....	1,000.00	
22....	Cash.....	1,000.00	
24....	Cash.....	2,000.00	
26....	From county treasurer on account of frontage tax	50,000.00	
29....	Cash.....	1,000.00	
30....	Cash.....	1,000.00	
			\$61,000.00



TABLE NO. IV.—Continued.

July 7....	Cash.....	\$10,000.00	
July 9....	Cash.....	5,000.00	
July 13....	Cash.....	3,000.00	
July 19....	Cash.....	2,000.00	
July 23....	Cash.....	1,000.00	
July 28....	Cash.....	1,000.00	
July 29....	From county treasurer on account of frontage tax	23,461.12	
July 31....	Cash.....	1,000.00	
			\$46,461.12
Aug. 5....	Cash.....	\$1,000.00	
Aug. 7....	Cash.....	1,000.00	
Aug. 11....	Cash.....	1,000.00	
Aug. 12....	Cash.....	1,000.00	
Aug. 17....	Cash.....	1,000.00	
Aug. 19....	Cash.....	1,000.00	
Aug. 20....	Cash.....	1,000.00	
Aug. 23....	Cash.....	1,000.00	
Aug. 27....	Cash.....	1,000.00	
Aug. 30....	Cash.....	2,000.00	
			\$11,000.00
Sept. 3....	Cash.....	\$5,000.00	
Sept. 7....	Cash.....	10,000.00	
Sept. 10....	Cash.....	5,000.00	
Sept. 11....	Cash.....	2,000.00	
Sept. 13....	Cash.....	2,000.00	
Sept. 14....	Cash.....	3,000.00	
Sept. 16....	Cash.....	2,000.00	
Sept. 18....	Cash.....	2,000.00	
Sept. 22....	Cash.....	1,000.00	
Sept. 24....	Cash.....	2,000.00	
Sept. 27....	Cash.....	1,000.00	
			\$35,000.00
Oct. 4....	Cash.....	\$2,000.00	
Oct. 6....	Cash.....	2,000.00	
Oct. 11....	Cash.....	1,000.00	
Oct. 12....	Cash.....	1,000.00	
Oct. 14....	Cash.....	2,000.00	
Oct. 20....	Cash.....	1,000.00	
Oct. 22....	Cash.....	1,000.00	
Oct. 26....	Cash.....	500.00	
Oct. 27....	Cash.....	500.00	
			\$11,000.00
Nov. 4....	Cash.....	\$1,000.00	
Nov. 6....	Cash.....	1,000.00	
Nov. 9....	Cash.....	1,000.00	
Nov. 11....	Cash.....	1,000.00	
Nov. 16....	Cash.....	2,000.00	
Nov. 19....	Cash.....	1,000.00	
Nov. 20....	From county treasurer on account of frontage tax	6,545.99	
Nov. 29....	Cash.....	1,000.00	
			\$14,545.99
Dec. 4....	Cash.....	\$1,000.00	
Dec. 6....	Cash.....	1,000.00	
Dec. 13....	Cash.....	1,000.00	
Dec. 16....	Cash.....	1,000.00	
Dec. 22....	Cash.....	1,000.00	
Dec. 28....	Cash.....	1,510.76	
			\$6,510.76
			\$304,459.11
Total .....			\$314,203.84

TABLE NO. 5.

WARRANTS DRAWN ON CITY TREASURER FROM JAN. 1, 1897, TO DECEMBER, 31, 1897, INCLUSIVE.

1897.		
Jan. 1.	Warrant No. 8480.....	\$3,701.42
Jan. 5.	Warrant No. 8481.....	5,850.00
Jan. 9.	Warrants Nos. 8482 to 8517 inclu.	4,498.71
Jan. 22.	Warrants Nos. 8518 to 8527 inclu.	440.49
		<hr/>
Feb. 1.	Warrant No. 8528.....	\$3,333.22
Feb. 8.	Warrants Nos. 8529 to 8571 inclu.	20,409.96
Feb. 13.	Warrant No. 8572.....	300.00
		<hr/>
Mar. 1.	Warrant No. 8573.....	\$3,227.09
Mar. 9.	Warrants Nos. 8574 to 8647 inclu.	27,167.34
Mar. 16.	Warrant No. 8648.....	15,000.00
Mar. 26.	Warrants Nos. 8649 to 8652 inclu.	1,025.30
		<hr/>
April 1.	Warrant No. 8653.....	\$3,012.17
April 9.	Warrants Nos. 8654 to 8700 inclu.	11,493.73
April 20.	Warrant No. 8701.....	5,000.00
		<hr/>
May 1.	Warrant No. 8702.....	\$3,199.36
May 7.	Warrants Nos. 8703 to 8755 inclu.	2,139.92
May 19.	Warrants Nos. 8756 to 8776 inclu.	1,535.43
May 25.	Warrant No. 8777.....	7,000.00
		<hr/>
June 1.	Warrant No. 8778.....	\$4,225.76
June 3.	Warrants Nos. 8779 to 8819 inclu.	1,907.99
June 22.	Warrants Nos. 8820 to 8845 inclu.	7,423.20
June 26.	Warrant No. 8846.....	50,000.00
		<hr/>
July 1.	Warrant No. 8847.....	\$3,945.42
July 9.	Warrants Nos. 8848 to 8894 inclu.	8,880.84
		<hr/>
Aug. 2.	Warrants Nos. 8895 to 8916 inclu.	\$12,048.91
Aug. 9.	Warrants Nos. 8917 to 8968 inclu.	6,031.97
		<hr/>
Sept. 1.	Warrants Nos. 8969 to 8990 inclu.	\$14,106.28
Sept. 9.	Warrants Nos. 8991 to 9039 inclu.	29,261.50
		<hr/>
Oct. 1.	Warrants Nos. 9040 to 9058 inclu.	\$14,326.70
Oct. 9.	Warrants Nos. 9059 to 9116 inclu.	5,760.99
		<hr/>
Nov. 1.	Warrants Nos. 9117 to 9130 inclu.	\$12,144.70
Nov. 9.	Warrants Nos. 9131 to 9186 inclu.	2,217.61
		<hr/>
Dec. 1.	Warrants Nos. 9187 to 9203 inclu.	\$4,481.74
Dec. 15.	Warrants Nos. 9204 to 9268 inclu.	4,283.76
		<hr/>
	Grand total.....	\$299,381.51
	Balance.....	\$14,822.33

TABLE NO. 6.

CONTRACTS MADE BY THE BOARD OF WATER COMMISSIONERS FROM  
JAN. 1, 1897, TO DEC. 31, 1897.

No.	Date of Contract.	With Whom and for What Purpose.	Am't of Contract.	Amount Paid.	Amount Due.
1	Feb. 10.	Lyle M. Fisher, printing annual report for 1896.....	\$335.80	\$335.80	
2	Mar. 27.	The Crane & Ordway Co., brass goods .....	529.60	529.60	
3	Mar. 27.	The Crane & Ordway Co., lead pipe and block tin.....	1,573.61	1,573.61	
4	Mar. 30.	Dwyer Plumbing & Heating Co., stopcock boxes.....	943.50	943.50	
5	April 1.	Bingham & Taylor, Buffalo, N. Y., valve boxes .....	613.78	613.78	
6	April 24.	Joseph Lamotte, fencing right of way, Centerville.....	703.71	703.71	
7	May 5.	E. P. Allis & Co., Milwaukee, Wis., 10-million engine, McCarron station .....	22,700.00		\$22,700.00
8	May 22.	Henry Orme, special castings for city extensions .....	664.75	664.75	
9	May 22.	Fairbanks, Morse & Co., laying water mains on Smith avenue between Goodrich and McBoal.....	651.00	583.90	65.10
10	May 22.	Fairbanks, Morse & Co., laying and re-laying water mains.....	4,828.65	4,343.99	482.66
11	May 22.	P. H. Thornton, laying water mains .....	422.67	380.40	42.27
12	May 22.	South Park Foundry & Machine Co., fire hydrants.....	788.50	788.50	
13	May 22.	South Park Foundry & Machine Co., water gates .....	1,020.50	1,020.50	
14	June 4.	Chas. A. Fuller, 8 tons pig lead....	518.98	518.98	
15	June 3.	Jas. Shiely, drayage.....	282.71	226.17	56.54
16	Mar. 26.	Pittsburg Meter Co., Pittsburg, Pa., water meters .....	5,442.00	4,966.00	476.00
17	June 3.	South Pittsburg Pipe Works, South Pittsburg, Tenn., cast iron pipe..	7,154.11	7,154.11	
18	May 27.	Robert W. Hunt & Co., Chicago, Ill., inspecting 10-million pump, McCarron station .....	800.00		800.00
19	June 4.	South Park Foundry & Machine Co., sprinkling attachment for hydrants, sluice gate and special flange connection .....	545.30	545.30	
20	July 1.	N. W. Fuel Co., coal and wood....	4,780.00	1,180.75	3,599.25
21	July 6.	Gillette-Herzog Mfg. Co., Minneapolis, weir tank, high service reservoir .....	400.00	400.00	
22	Aug. 25.	Builders' Iron Foundry, Providence, R. I., Venturi meter, 30-inch.....	1,151.75		1,151.75
23	Aug. 27.	W. H. Jackson, White Bear, dwelling house, Centerville.....	1,474.00	1,474.00	
24	Oct. 23.	Jno. Kenny, boiler for McCarron station .....	1,223.00		1,223.00
25	Oct. 25.	Howard-Harrison Iron Co., cast iron specials .....	945.50		945.50
26	Dec. —.	G. F. Moulton, 25,000 paving brick.	350.00		350.00
27	Dec. 6.	Kettle River Sandstone Co., stone for 10-million gallon pumping engine .....	548.00		548.00
			\$61,389.42	\$28,949.35	\$32,440.07

TABLE NO. 6.—Continued.

CONTRACTS MADE PREVIOUS TO DEC. 31, 1896, AND FOR WHICH FINAL SETTLEMENT WAS NOT MADE AT TIME OF LAST REPORT.

Date of Contract.	With Whom and for What Purpose.	Am't Due Dec. 1, 1896	Amount Paid.	Amount Due.
July 17, 1895.	Ransome Subway Co., Chicago, conduit to Otter lake.....	\$413.29	\$413.29	
April 20, 1896.	E. P. Allis & Co., Milwaukee, pumping engine, Centerville.....	10,350.00	10,000.00	\$350.00
May 10.	J. T. Millon, laying water mains on Duke street.....	114.22	114.22	
May 20.	Patrick Doherty, laying water mains in city.....	344.05	344.05	
May 20.	Hennessy & Cox, wooden conduit to Centerville.....	1,500.00		1,500.00
July 8.	Hennessy & Cox, pump house at Centerville.....	50.00		50.00
July 8.	John Kenny, boiler McCarron Lake station.....	176.50	176.50	
July 25.	Fairbanks, Morse & Co., laying 30-inch water pipes.....	700.61	700.61	
Sept. 28.	S. Swanson, two artesian wells at Vadnais lake.....	1,095.20	1,095.20	
Oct. 10.	John Kenny, smoke stack, Centerville station.....	270.00	270.00	
Oct. 14.	Nic. Feyen, grading on Centerville conduit.....	50.00	50.00	
Oct. 29.	N. W. Fuel Co., coal and wood.....	4,136.42	4,136.42	
Oct. 29.	Pioneer Fuel Co., coal for Vadnais station.....	202.50	202.50	
		\$19,402.79	\$17,502.79	\$1,900.00



TABLE NO. 7.

## BOND ACCOUNT JANUARY 1, 1898.

Date of Legislative Act Authorizing Issue of Bonds.	Amount of Bonds Au- thorized.	Date of Bonds Issued.	When Due.	Amount of Bonds Issued.	Rate.	INTEREST PAYABLE.											Total Annual Interest		
						Dec. 1.	Jan. 2.	Feb. 1.	Mar. 2.	April 1.	May 2.	June 1.	July 2.	Aug. 1.	Sept. 1.	Oct. 1.		Nov. 2.	
Feb. 10, 1881	\$600,000	June 1, 1882	30 years	\$350,000	4 per cent	\$7,000													\$14,000
Jan. 26, 1883	500,000	Aug. 1, 1883	30 years	150,000	5 per cent														7,500
Feb. 21, 1885	800,000	April 1, 1884	25 & 30 years	600,000	5 per cent			\$3,750									\$3,750		80,000
Jan. 31, 1887	200,000	April 1, 1885	30 years	400,000	5 per cent					10,000								10,000	20,000
Jan. 31, 1887	160,000	May 2, 1887	30 years	200,000	4½ per cent						\$4,500								9,000
Jan. 29, 1888	300,000	Mar. 1, 1888	30 years	300,000	4½ per cent				\$6,750									\$6,750	13,500
Mar.		Jan. 1, 1889	30 years	100,000	4½ per cent		\$2,250							\$2,250					4,500
		Jan. 2, 1889	30 years	160,000	4½ per cent		3,600							3,600					7,200
		May 1, 1889	30 years	100,000	4½ per cent						2,250							2,250	4,500
		May 1, 1890	30 years	100,000	4 per cent							2,000						2,000	4,000
	2,560,000			\$2,480,000		\$7,000	\$5,850	\$3,750	\$6,750	\$25,000	\$8,750	\$7,000	\$5,850	\$3,750	\$6,750	\$25,000	\$8,750		\$114,200

TABLE NO. 8.

## STATEMENT SHOWING AMOUNT DUE THE BOARD OF WATER COMMISSIONERS ON DEC. 31, 1897, FROM CITY OF ST. PAUL.

Water for fire purposes from Dec. 1, 1891, to June 1, 1892.....	\$28,401.53		
Water for fire purposes from June 1, 1892, to Dec. 1, 1892.....	29,229.79		
Water for fire purposes from Dec. 1, 1892, to June 1, 1893.....	30,546.89		
Water for fire purposes from June 1, 1893, to Dec. 1, 1893.....	31,607.77		
Water for fire purposes from Dec. 1, 1893, to June 1, 1894.....	31,773.12		
Water for fire purposes from June 1, 1894, to Dec. 1, 1894.....	32,307.00		
Water for fire purposes from Dec. 1, 1894, to June 1, 1895.....	32,700.16		
Water for fire purposes from June 1, 1895, to Dec. 1, 1895.....	33,204.95		
Water for fire purposes from Dec. 1, 1895, to June 1, 1896.....	33,341.84		
Water for fire purposes from June 1, 1896, to Dec. 1, 1896.....	33,509.57		
Water for fire purposes from Dec. 1, 1896, to June 1, 1897.....	33,663.27		
Water for fire purposes from June 1, 1897, to Dec. 1, 1897.....	33,823.91		
		\$384,109.80	
Premiums received and retained by city on the \$100,000 of bonds issued in January, 1889, to redeem the bonds of the old St. Paul Water Co. of like amount assumed by the city at the time of the purchase of the works.....		5,393.77	
Relaying of water mains caused by change of grade—			
On Mt. Alry between Valley and Warren .....	\$248.12		
On Fairview between Jackson and Mt. Alry .....	134.25		
On East Sixth between Maria and Hoffman .....	390.75		
On East Sixth between Broadway and Olive .....	674.37		
On Flandrau at Harvester.....	65.00		
Changing main at Como bridge.....	760.58		
		2,282.07	
Balance for park fountains, 1894. \$340.00			
For water for park fountains, all 1895.....	815.00		
For water for park fountains, all 1896.....	855.00		
For water for drinking fountains, all 1896.....	362.00		
For water for parks and drinking fountains for 1897.....	\$1,656.00		
	\$4,028.00		
		\$4,028.00	
		\$395,813.64	
Repairing water mains broken by sewer contractors (claims filed with city comptroller).....			114.14
Balance frontage tax assessment for 1890 and prior .....	\$3,629.30		
Balance frontage tax assessment for 1891.....	1,706.22		
Balance frontage tax assessment for 1892.....	1,106.86		
Balance frontage tax assessment for 1893.....	717.54		
Balance frontage tax assessment for 1894.....	6,591.87		
Balance frontage tax assessment for 1895.....	11,748.07		
Balance frontage tax assessment for 1896.....	30,116.70		
For frontage tax assessment for 1897.....	104,052.58		
		\$159,669.14	
From builders .....		100.00	
From service connections.....		112.50	
Street sprinkling 1895.....		949.47	
Street sprinkling 1896.....		2,204.66	
Street sprinkling 1897.....		12,576.39	
			\$15,943.02
Total .....			\$571,539.94

TABLE NO. 9.  
FRONTAGE TAX ACCOUNT COLLECTIONS—BALANCE DUE JAN. 1, 1898.

RECEIPTS FOR YEARS.	1890 and Prior.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	Total
March 16, 1897.....	\$12.00	\$17.40	\$73.18	\$17.05	\$902.01	\$7,370.47	\$3,347.48	.....	\$11,441.24
May 26, 1897.....	.....	.....	.....	.....	.....	.....	15,000.00	.....	15,000.00
June 26, 1897.....	.....	.....	.....	.....	.....	.....	50,000.00	.....	50,000.00
July 29, 1897.....	.....	.....	163.31	81.00	937.44	8,578.16	13,761.21	.....	23,461.12
Nov. 20, 1897.....	.....	.....	.....	.....	170.40	3,075.81	2,699.78	.....	6,545.90
Total receipts.....	\$12.00	\$17.40	\$170.49	\$98.05	\$1,708.85	\$19,924.44	\$54,808.47	.....	\$108,448.35
Amount due Jan. 1, 1897, as per last report.....	\$3,642.29	\$1,723.08	\$1,283.35	\$816.19	\$8,301.72	\$31,372.51	\$114,925.17	.....	\$162,064.91
Amount of 1897 assessment collectible in 1898.....	.....	.....	.....	.....	.....	.....	.....	\$104,052.58	\$55,616.76
Amount due Jan. 1, 1898....	\$3,620.30	\$1,706.22	\$1,100.86	\$717.54	\$6,501.87	\$11,748.07	\$30,116.70	\$104,052.58	\$159,690.14

TABLE NO. 10.

## SINKING FUND INVESTMENTS IN TAX LEVY CERTIFICATES AND CITY BONDS.

DATE OF INVESTMENT.	DATE OF CERTIFICATES.	WHEN DUE.	CERTIFICATE NUMBERS.	No. of Cert.	Interest.	Amount of Certificates.
Mar. 1, 1897.....	Mar. 1, 1897.....	Mar. 1, 1907.....	1 city bond .....	1	1 1/2%	\$100,000.00
June 9, 1897.....	June 15, 1897.....	Nov. 15, 1898.....	1425 to 2032 inclusive..	608	1 1/2%	304,000.00
Sept. 1, 1897.....	Sept. 1, 1897.....	Sept. 1, 1907.....	1 city bond .....	1	1 1/2%	50,000.00
Amount uninvested .....	.....	.....	.....	.....	.....	\$454,000.00
.....	.....	.....	.....	.....	.....	*\$7,525.08

\*This was invested Jan. 15, 1898, in 4% city tax levy certificates.



TABLE NO. 11.

PAY ROLL FOR YEAR INCLUDES SALARIES OF OFFICERS, ENGINEERS, FIREMEN, INSPECTORS AND LAWYERS.										SALARIES OF ENGINEERS, FIREMEN AND KEEPERS AT THE VARIOUS STATIONS.				
MONTH.		No. of Men.	Total Amount of Pay Rq'd.	McCarrou Lake Station.	Vadnals Lake Station.	Baldwin Lake Station.	West St. Paul Station.	Centerville Station.	Reservoir.	Total.				
1896.														
December .....		89	\$3,701.42	\$300.00	\$50.00	.....	\$110.00	\$120.00	\$25.00	\$905.00				
1897.														
January .....		81	3,333.22	300.00	50.00	.....	110.00	81.50	25.00	566.50				
February .....		78	3,227.09	300.00	50.00	.....	110.00	50.00	25.00	535.00				
March .....		74	3,012.17	300.00	50.00	5.00	110.00	60.00	25.00	560.00				
April .....		83	3,199.38	300.00	50.00	5.00	110.00	80.00	40.00	568.00				
May .....		101	4,225.76	300.00	50.00	5.00	110.00	60.00	40.00	568.00				
June .....		113	3,945.42	300.00	50.00	5.00	110.00	60.00	40.00	565.00				
July .....		108	4,052.94	300.00	50.00	.....	110.00	101.00	40.00	565.00				
August .....		92	4,056.31	300.00	110.00	.....	110.00	71.00	40.00	621.00				
September .....		105	4,188.09	300.00	110.00	.....	110.00	60.00	40.00	621.00				
October .....		116	4,348.84	300.00	110.00	5.00	110.00	60.00	40.00	625.00				
November .....		90	3,752.72	300.00	84.00	5.00	110.00	60.00	25.00	584.00				
Total .....		1,140	\$45,003.34	\$3,600.00	\$754.00	\$35.00	\$1,320.00	\$843.50	\$405.00	\$9,967.50				

TABLE NO. 12.

OWING TABLE SHOWS THE NUMBER OF APPLICATIONS  
OR WATER SERVICES ANNUALLY FROM 1860 TO DATE.

YEAR.	High Service.	Low Service.	Total.
.....	.....	34	2,426
.....	.....	321	
.....	.....	250	
.....	.....	164	
.....	.....	131	
.....	.....	153	
.....	.....	95	
.....	.....	85	
.....	.....	67	
.....	.....	50	
.....	.....	180	
.....	.....	167	
.....	.....	164	
.....	.....	264	
.....	.....	301	
.....	.....	330	500
.....	164	336	1,009
.....	644	365	1,008
.....	639	369	1,008
.....	747	325	1,072
.....	812	406	1,218
.....	1,327	491	1,818
.....	1,071	339	1,407
.....	811	264	1,075
.....	671	210	881
.....	474	151	625
.....	363	139	502
.....	390	311	701
.....	384	156	540
.....	332	98	430
.....	8,820	6,383	15,212

TABLE NO. 13.

PUMPING PLANTS.

MAINTAINING THE FIVE (5) PUMPING STATIONS AND RES-  
ER VOIR.

	Salaries.	Fuel.	Waste and Mach. Oil.	Supplies & Repairs.	Kerosene Oil.	Total.
ike.....	\$3,600.00	\$3,888.07	\$237.45	\$101.68	.....	\$7,827.20
ce.....	35.00	.....	.....	.....	.....	35.00
e.....	754.00	479.83	6.59	46.92	\$9.81	1,297.15
il.....	1,320.00	361.22	5.36	42.86	11.60	1,741.04
.....	843.50	1,764.85	35.92	2.58	9.54	2,656.39
.....	405.00	.....	.....	.....	.....	405.00
.....	\$6,957.50	\$6,493.97	\$285.32	\$194.04	\$30.95	\$13,961.78

TABLE NO. 14.

METERS IN SERVICE JAN. 1, 1896.

KIND OF METER.	SIZE.								Total.
	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	3	4	
Worthington (Improved).....	114	119	33	43	7	4	2	322	
Worthington (old style).....	6	15	9	8	2	..	..	40	
Union (rotary).....	82	21	13	7	2	2	3	130	
Union (piston).....	..	1	1	..	..	..	..	2	
Columbia.....	6	..	..	..	..	..	..	6	
Nash.....	11	2	1	..	..	..	..	14	
Nash "A".....	16	..	..	..	..	..	..	16	
Nash "AA".....	60	..	..	..	..	..	..	60	
Crown.....	74	18	26	34	10	1	2	165	
Crown "AA".....	553	..	17	4	..	..	..	574	
Empire.....	14	20	45	35	8	..	1	123	
Empire "A".....	..	5	4	2	..	..	..	11	
Gem.....	..	..	..	..	..	1	1	2	
Thomson.....	..	18	6	2	..	..	..	26	
Thomson "B".....	1	49	12	4	2	2	..	70	
Lambert.....	..	2	..	..	..	..	..	2	
Lambert "A".....	..	1	2	..	..	..	..	3	
Hersey.....	..	31	39	29	25	11	2	137	
Hersey disc.....	..	3	..	..	1	1	..	5	
Frost.....	..	..	1	..	..	..	..	1	
Trident.....	..	58	2	1	..	..	..	61	
Westinghouse.....	..	..	4	1	1	..	..	10	
Pittsburg disc.....	..	496	8	11	4	1	..	520	
Totals.....	15	1,600	205	188	129	45	10	9,230	

TABLE NO. 15.

Shut off and Turned on water from Jan. 1, 1897, to Jan. 1, 1896.

	High Service.	Low Service.	Total.
Shut off for repairs.....	248	250	498
Shut off for non-payment.....	232	190	422
Shut off for vacant premises.....	641	475	1,116
Shut off for violation of rules.....	5	5	10
Totals.....	1,126	920	2,046
Turned on old services.....	1,094	839	1,933
Turned on new services.....	329	103	432
Turned on for builders.....	...	...	24
Totals.....	1,423	942	2,369

Total services shut off and turned on for year ending:

December 1, 1884.....	1,014	December 1, 1891.....	4,743
December 1, 1885.....	2,311	December 1, 1892.....	4,470
December 1, 1886.....	2,384	December 1, 1893.....	4,477
December 1, 1887.....	2,541	December 1, 1894.....	4,932
December 1, 1888.....	2,833	December 1, 1895.....	4,696
December 1, 1889.....	3,078	December 31, 1896.....	4,373
December 1, 1890.....	3,919	December 31, 1897.....	4,455

TABLE NO. 16.

ING THE DIFFERENT KINDS AND SIZES OF METERS BELONG-  
TO THE CITY AND PRIVATE PARTIES IN SERVICE AND ON  
ND DEC. 31, 1897.

KIND OF METERS.	Size in Inches.	PROPERTY OF CITY.			PRIVATE PROPERTY.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of all Meters.
		In Service.	At Work Shop.	Total.	In Service.	At Work Shop.	Total.			
ington improved.	4	2		2	2		2	2		2
ington improved.	3				4		4	4		4
ington improved.	1 1/2	38		2	5		5	7		7
ington improved.	1	31	1	32	2		2	33	1	34
ington improved.	1 1/2	117	2	119	2		2	119	2	121
ington improved.	3/4	94	1	95	20		20	114	1	115
ington old style.	3		3	3					3	3
ington old style.	2 1/2	2		2				2		2
ington old style.	1 1/2	2	1	3				3		3
ington old style.	1	8	2	10	1		1	9	2	11
ington old style.	3/4	15		15				15		15
ington old style.	3/4	6		6				6		6
rotary.	4	3		3				3		3
rotary.	3	2		2				2		2
rotary.	2 1/2	2		2				2		2
rotary.	1 1/2	6		6	1		1	7		7
rotary.	1	13		13				13		13
rotary.	3/4	21	2	23				21	2	23
rotary.	3/4	82		82				82		82
piston.	1	1		1				1		1
piston.	3/4	1		1				1		1
ona	3/4	6		6				6		6
	1				1		1	1		1
	3/4	2	1	3				2	1	3
	3/4	10		10	1		1	11		11
"A"	3/4	16		16				16		16
"AA"	3/4	60		60				60		60
	4	2		2				2		2
	3	1		1				1		1
	2 1/2	9		9	1		1	10		10
	1 1/2	34		34				34		34
	1	26	2	28				26	2	28
	3/4	18		18				18		18
	3/4	72		72	2		2	74		74
"AA"	3/4		1	1					1	1
"AA"	1 1/2	4		4				4		4
"AA"	1	17		17				17		17
"AA"	3/4	553	3	556				553	3	556
	4	1		1				1		1
	2 1/2	8	1	9				8	1	9
	1	35	1	36				35	1	36
	3/4	45	1	46				45	1	46
	3/4	20		20				20		20
	1 1/2	14		14				14		14
"A"	1	2		2				2		2
"A"	3/4	4	1	5				4	1	5
"A"	3/4	5		5				5		5
"AA"	3/4		1	1					1	1
	4				1		1	1		1
on	3	1		1		1	1	1		2
on	1	2		2				2		2
on	3/4	6	2	8				6	2	8
on	3/4	18		18				18		18
on "B"	2 1/2	1		1	1		1	2		2
on "B"	1 1/2	2		2				2		2
on "B"	1	4	1	5				4	1	5
on "B"	1 1/2	12		12				12		12
on "B"	3/4	49	1	50				49	1	50
on "E"	1 1/2	1		1				1		1
rt	3/4	2	2	4				2	2	4
rt "A"	3/4	2		2				2		2
rt "A"	1	1		1				1		1



TABLE NO. 16—Continued.

KIND OF METERS.	Size in Inches.	PROPERTY OF CITY.			PRIVATE PROPERTY.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of Meters in Shop.
		In Service.	At Work Shop.	Total.	In Service.	At Work Shop.	Total.			
Hersey .....	3	2		2				2		
Hersey .....	2	11	1	12				11	1	
Hersey .....	1½	25		25				25		
Hersey .....	1	29		29				29		
Hersey .....	¾	39		39				39		
Hersey .....	¾	31	1	32				31	1	
Hersey disc. ....	2	1		1				1		
Hersey disc. ....	1½	1		1				1		
Hersey disc. ....	¾	3		3				3		
Frost .....	1	1		1				1		
Sport .....			1	1					1	
Trident .....	1	1		1				1		
Trident .....	¾	2		2				2		
Trident .....	¾	58	1	59				58	1	
Westinghouse .....	2	1		1				1		
Westinghouse .....	1½	1		1				1		
Westinghouse .....	1	4	1	5				4	1	
Westinghouse .....	¾	4		4				4		
Pittsburg disc. ....	2	1		1				1		
Pittsburg disc. ....	1½	4	2	6				4	2	
Pittsburg disc. ....	1	11	1	12				11	1	
Pittsburg disc. ....	¾	8	2	10				8	2	
Pittsburg disc. ....	¾	496	53	549				496	53	
Totals .....		2251	95	2346	49	1	50	2300	96	2396

TABLE NO. 17.  
EXPENSE FOR MAINTAINING PUMPING STATIONS AND RESERVOIR FOR YEARS 1891-2-3-4-5-6 AND 7, McCAR-  
RON LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891	\$5,540.00	\$4,702.12	\$213.86	\$250.93	\$38.50	\$8,725.14	1,106,034.800	3,030.232	2,134,000	5,845	\$71,080
1892	5,075.00	5,400.89	302.36	37.82	38.75	9,352.82	1,071,130.320	2,934.603	2,036,734	5,380	.....
1893	3,503.00	5,413.30	270.56	329.46	Electric.	9,615.32	1,298,551.200	3,557.674	2,147,888	5,884	623,070
1894	3,706.50	5,012.85	237.99	351.12	5.20	9,313.66	1,300,813.800	3,882.110	2,345,731	6,427	326,000
1895	3,652.00	5,034.79	243.57	260.09	5.20	9,204.65	1,536,012.000	4,210.719	2,536,020	6,948	338,000
1896 (13 mos.)	3,747.00	5,963.64	232.40	305.74	.....	10,308.78	1,051,524.200	4,160.011	2,751,098	6,915	*50,708
1897	3,600.00	3,888.07	237.45	101.08	.....	7,827.20	1,280,312.340	3,507.705	2,074,208	5,682	*652,306

\*Decrease.

## BALDWIN LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891	\$1,507.16	\$4,908.44	\$51.98	\$77.39	\$22.14	\$6,657.11	1,983,034.500	8,077.535	Coal 150,225 Wood 797 1/4	.....	.....
1892	1,062.08	941.00	56.28	56.12	11.90	2,127.38	1,153,794.000	9,470.293	Wood 576	.....	.....
1893	1,145.66	778.42	45.18	363.60	10.35	2,343.60	1,104,158.600	9,219.023	Wood 461 1/4	.....	.....
1894	1,245.66	1,182.65	49.80	251.63	10.30	2,739.44	1,440,360.000	8,602.406	Wood 566 1/4	4 1/2	.....
1895	1,450.00	2,524.46	23.77	46.19	27.08	4,070.50	1,914,949.800	8,824.633	Wood 821 1/2	4	.....
1896 (13 mos.)	1,564.70	1,697.88	17.88	14.40	16.93	3,310.79	1,917,038.000	9,271.715	Wood 841 1/4	4.3	.....
1897	35.00	.....	.....	.....	.....	35.00	.....	.....	.....	.....	.....

PUMPING STATIONS AND RESERVOIR—Continued.  
VADNAIS LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.	
							Annually.	Daily.	Annually.	Daily.
1891	\$1,100.00	\$1,081.68	\$50.75	\$107.12	\$4.36	\$2,435.91	207,750.000	.....	246,800	.....
1892	1,020.00	1,005.25	73.71	102.19	25.90	3,127.05	.....	.....	.....	.....
1893	600.00	1,005.25	73.71	21.35	.....	621.35	.....	.....	.....	.....
1894	912.50	1,508.99	21.06	216.75	20.60	2,679.90	337,100.000	.....	624,347	.....
1895	848.33	1,105.00	47.50	31.58	11.64	2,044.05	237,043.000	.....	550,000	.....
1896 (13 mos.)	1,147.48	1,618.77	44.22	38.76	32.52	2,861.75	938,611.850	.....	612,614	.....
1897	754.00	479.83	6.59	46.92	9.81	1,297.15	290,299.356	786,341	106,950	.....

WEST ST. PAUL STATION.

1893	\$1,237.75	\$589.63	\$20.72	\$23.61	\$15.10	\$1,895.70	10,015.722	27,440	209,043	571
1894	1,320.00	328.98	2.88	28.83	14.20	1,694.87	9,123.480	24,900	169,220	463
1895	1,320.00	269.50	5.27	26.47	9.08	1,694.32	10,520.640	28,848	174,600	479
1896 (13 mos.)	1,430.00	529.88	4.58	33.37	12.00	2,009.83	13,497.120	83,998	212,200	535
1897	1,320.00	361.22	5.36	42.86	11.60	1,741.04	16,018.200	43,886	226,800	629

CENTERVILLE STATION.

1897	\$943.50	\$1,704.85	\$35.92	\$2.56	\$9.54	\$2,056.30	.....	.....	.....	.....
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RESERVOIR.

Year.	Salaries.	Year.	Salaries.
1891	\$405.00	1895	\$405.00
1892	405.00	1896 (13 months)	480.00
1893	405.00	1897	480.00
1894	405.00		405.00

TABLE NO. 18.  
COMPARATIVE STATEMENT OF HOSE VIOLATIONS FOR 1894-5-6 AND 7.

Violations.	1894.			1895.			1896.			1897.		
	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.
Hose, 1 violation.....	200	129	329	138	87	223	155	46	201	91	9	100
Hose, 2 violations.....	28	16	44	5	1	6	10	3	13	1	1	2
Hose, 3 violations.....	13	7	20	1	.....	1	1	1	2	2	.....	2
Hose, 4 violations.....	2	3	5	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hose, 5 violations.....	1	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hose, 6 violations.....	2	2	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hose, 7 violations.....	185	50	235	34	1	34	61	4	65	1	1	38
Reel, 6 to 9 p. m., 1 violation.	22	14	36	6	1	7	1	.....	1	2	.....	2
Reel, 6 to 9 p. m., 2 violations.	6	2	8	2	2	4	1	.....	1	.....	.....	.....
Reel, 6 to 9 p. m., 3 violations.	2	1	3	2	2	4	.....	.....	.....	.....	.....	.....
Reel, 6 to 9 p. m., 4 violations.	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Reel, 6 to 9 p. m., 7 violations.	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hose, all day, 1 violation.....	162	34	196	1	.....	1	40	3	43	26	9	35
Hose, all day, 2 violations.....	23	9	32	1	.....	1	.....	.....	.....	3	.....	3
Hose, all day, 3 violations.....	2	4	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hose, all day, 4 violations.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals .....	648	274	922	188	88	276	260	57	326	163	19	182



TABLE NO. 19.

## STATEMENT SHOWING THE NUMBER OF MILES OF PIPE LAID ANNUALLY TO DATE, EXPENSE OF SAME, FRONTAGE TAX, ETC.

	MAINS LAID.		Expenditure on Account of Laying Mains.	Construction Outside of City.	Annual Maintenance	Number of Applications for Taps.	Annual Receipts from Consumers.	Increase.	Frontage Tax Receipts.	Number of Fire Hydrants in Use.	Frontage Tax Assessment.	Years Frontage Tax Has Been Paid Incl. 1894.	Years More to Pay on Basis of 10 Years.
	Miles.	Feet.											
To Aug. 10, 1882.	23 1.662					2,007							
From Aug. 10, '82, to Dec. 1, '82.	3.793			\$1,566.80	\$1,074.58	118				188			
From Dec. 1, '82, to Dec. 1, '83.	4.807			100,021.19	6,854.30	301				236			
From Dec. 1, '83, to Dec. 1, '84.	16 1.220			609,686.93	11,473.84	540				315	\$12,852.76	11	
From Dec. 1, '84, to Dec. 1, '85.	23 2.583			40,148.38	19,275.58	1,048			\$12,280.90	401	20,590.06	10	
From Dec. 1, '85, to Dec. 1, '86.	18 3.334			19,857.48	17,976.64	1,048			52,435.01	673	33,757.08	9	
From Dec. 1, '86, to Dec. 1, '87.	20 2.207			32,976.47	22,806.58	1,072			10,538.26	808	46,398.88	8	
From Dec. 1, '87, to Dec. 1, '88.	28 3.302			97,736.31	23,700.81	1,218	\$106,635.23	\$12,976.71	43,062.60	1,134	58,000.10	7	
From Dec. 1, '88, to Dec. 1, '89.	35 4.963			80,680.69	26,122.60	1,818	112,720.01	6,084.14	55,046.01	1,471	76,706.21	6	
From Dec. 1, '89, to Dec. 1, '90.	20 4.085			28,028.29	36,062.75	1,407	124,020.90	12,240.80	73,079.70	1,748	99,680.96	5	
From Dec. 1, '90, to Dec. 1, '91.	5 3.696			38,937.07	38,473.82	1,075	139,581.30	13,092.71	88,967.80	1,813	117,947.05	4	
From Dec. 1, '91, to Dec. 1, '92.	14 3.828			41,527.25	35,349.12	881	171,164.69	11,603.40	112,062.57	1,968	123,886.45	3	
From Dec. 1, '92, to Dec. 1, '93.	8 1.946			6,198.62	36,404.84	625	177,595.21	6,430.62	107,869.11	2,067	135,336.46	2	
From Dec. 1, '93, to Dec. 1, '94.	6 6.646			24,624.65	30,130.72	502	178,967.32	1,372.11	112,115.05	2,131	143,001.73	1	
From Dec. 1, '94, to Dec. 1, '95.	8 1.13			116,664.23	41,840.24	701	179,246.52	278.20	147,171.40	2,200	125,374.26		
From Dec. 1, '95, to Dec. 31, '96.	3 3.185			27,866.79	37,105.41	540	180,714.78	11,448.26	123,172.44	2,252	114,925.17		
From Dec. 31, '96, to Dec. 31, '97.	2 4.490					430	170,796.86	10,918.43	106,448.35	2,249	104,062.58		
	247 710		\$2,016,507.81	\$1,268,635.57	\$433,346.09	15,212			\$1,048,389.14				
Less relaid and mains abandoned.	7 4.684								\$2,689.04				
Net amount mains.	239 1.306								\$1,040,701.10				

This includes relaying 16-inch pipe on Lafayette avenue near Trout Brook, of regrading street, at an expense of \$4,677.97.

a Pumping station established for high service in fall of 1894.

b Pumping station established for well plant at Vadnais lake, also Rice lakes.

c Pumping station established for high service in West St. Paul in fall of 1892.

d This includes laying the 20-inch force main to reservoir.

e This includes laying 9,234 feet of 30-inch supply main on Dale street from reservoir to Dale and Front, at an expense of \$38,365.78

f This is for a period of 13 months.

g This includes laying 7,680 feet of 30-inch cast iron force main from McCarron lake pumping station to high service reservoir, at an expense

of \$49,347.64.

h Decrease.

i Amount refunded.

TABLE NO. 20.  
STATEMENT SHOWING NUMBER OF METERS, CONSUMPTION OF WATER, AMOUNTS RECEIVED FOR WATER  
AND METER RENT, AND AVERAGE RATE PER MONTH.

MONTH. 1896.	Num- ber of Meters.	Consump- tion Cubic Feet.	Amounts Received for Water.	Amounts Rec'd for Meter Rent.	Average Rate per 100 Cub. Ft.	MONTH. 1897.	Num- ber of Meters.	Consump- tion Cubic Feet.	Amounts Received for Water.	Amounts Rec'd for Meter Rent.	Average Rate per 100 Cub. Ft.
January .....	1,155	5,970,603	\$4,824.03	\$234.00	.08081	January .....	1,594	6,249,691	\$5,103.00	\$290.19	.081
February .....	1,164	6,235,792	5,022.64	255.60	.08083	February .....	1,601	5,836,416	4,821.99	298.73	.0826
March .....	1,224	6,187,889	5,000.19	245.42	.08096	March .....	1,719	6,123,406	5,011.21	315.12	.0818
April .....	1,241	6,453,270	5,212.08	249.48	.08076	April .....	1,758	6,005,240	5,072.35	323.14	.0832
May .....	1,285	6,274,503	5,164.62	255.48	.08231	May .....	1,821	5,947,842	4,274.06	332.49	.0718
June .....	1,399	6,869,093	5,587.64	258.61	.0826	June .....	1,867	6,298,849	4,464.09	330.41	.0708
July .....	1,378	6,523,906	5,287.94	274.81	.08258	July .....	2,000	6,320,188	4,560.55	390.46	.0721
August .....	1,415	6,801,623	5,596.42	274.80	.08228	August .....	2,059	6,671,269	4,738.88	396.37	.071
September .....	1,489	7,892,065	6,305.34	289.77	.07989	September .....	2,183	6,616,801	4,840.61	380.06	.07315
October .....	1,515	6,518,949	5,324.12	292.80	.08167	October .....	2,352	6,542,878	4,764.48	396.73	.0728
November .....	1,526	6,541,652	5,306.11	290.25	.0811	November .....	2,286	6,394,309	4,620.55	390.97	.07246
December .....	1,546	5,935,142	4,896.44	291.05	.08223	December .....	2,268	6,295,372	4,574.95	402.38	.0726
Totals .....		78,147,427	\$63,621.47	\$3,192.07	.08141	Totals .....		75,392,211	\$56,865.72	\$4,225.05	.0754

LIST OF VOUCHERS PAID FROM JAN. 1, 1897, TO DEC. 31, 1897.  
JANUARY, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8480	C. L. Horst, city treasurer.....	Pay roll for December, 1896....	\$3,701.42
8481	C. L. Horst, city treasurer.....	Interest on water department bonds to Jan. 1, 1897.....	5,850.00 3,750.00
8482	C. L. Horst, city treasurer.....	Interest due Feb. 1, 1897.....	2.15
8483	Boeringer & Son.....	Repairing eng. instruments.....	25.00
8484	Est. of Jas. Glidillan.....	Rent of storage lot.....	3.50
8485	P. N. Lindquist.....	Horseshoeing.....	2.50
8486	Jos. Peltier.....	One cord oak wood.....	5.05
8487	Cornplanter Oil Co.....	Gasoline.....	4.10
8488	Wyckoff, Seamans & Benedict.....	Typewriter supplies.....	16.50
8489	Hennessey & Cox.....	Fire brick, cement and labor.....	24.93
8490	Crane, Ordway & Co.....	Pipe and pipe fittings.....	40.04
8491	P. H. Kelly Merc. Co.....	Oil, candles and matches.....	12.90
8492	Farwell, Ozmun, Kirk & Co.....	Tools.....	.75
8493	Smith & Farwell Co.....	Shade for second floor office.....	7.35
8494	The N. W. Telephone Ex. Co.....	Rent of telephones.....	4.50
8495	Northwestern Eng. Co.....	Spec. hot blast torch.....	2.06
8496	Robinson & Cary Co.....	Pipe fittings.....	6.00
8497	Daniel Cashill & Co.....	Horse shoeing.....	5.50
8498	Wedelstaedt & Carman.....	Job printing.....	2.25
8499	Union Brass & Metal Mnf'g. Co.....	Rep. air chamber to lubricator.....	5.00
8500	Allen & Co.....	Livery.....	3.75
8501	Joseph Garceau.....	Blacksmithing.....	33.10
8502	J. B. Trudeau.....	Hauling coal to Centerville.....	261.36
8503	Northwestern Fuel Co.....	Est. No. 3, fuel.....	75.00
8504	Pioneer Fuel Co.....	Est. No. 2, fuel.....	2.00
8505	Fred Schroeder.....	Livery.....	2.75
8506	St. Paul Co-operative Painting Co.....	Papering and kalsomining.....	15.00
8507	H. C. Boyeson.....	Stationery.....	6.05
8508	So. Park Foundry & Mach. Co.....	One 24-inch plug.....	9.67
8509	The Western Supply Co.....	Pipe and pipe fittings.....	7.44
8510	Mitsch Wagon & Carriage Co.....	Sharpening tools.....	10.05
8511	J. G. Duggan.....	Blacksmithing.....	55.80
8512	Jno. Caulfield, secretary.....	Cash advanced.....	1.50
8513	H. G. Neal.....	Replacing awning.....	.78
8514	Nicols & Dean.....	Machine bolts.....	8.85
8515	Jos. Forcier.....	Board of men—intake pipe.....	21.84
8516	Ant. Lamotte.....	Poles for intake.....	73.59
8517	Thos. Brennan Lumber Co.....	Lumber for intake.....	24.84
8518	D. Cardinal.....	Hay.....	4.42
8519	The Globe Co.....	Advertising—proposals for oil.....	11.25
8520	Jno. Townsend.....	Fire insurance.....	11.25
8521	Geo. H. Townsend.....	Insurance.....	13.10
8522	Jno. Rogers, Jr., & Bro.....	Insurance.....	52.50
8523	South Park Foundry & Mach. Co.....	Est. No. 8, valves.....	19.88
8524	N. Feyen.....	Hauling piling—Hugo to Cen- terville.....	55.25
8525	Pioneer Press.....	Blank books.....	3.00
8526	Wedelstaedt & Carman.....	Printing postal cards, etc.....	245.00
8527	John Kenny.....	Est. No. 1, smoke stack, Cen- terville.....	
	Total.....		\$14,490.62

## LIST OF VOUCHERS—Continued.

FEBRUARY, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8528	C. L. Horst, city treasurer.....	Pay roll for January, 1897.....	\$3,333.22
8529	C. L. Horst, city treasurer.....	Interest due March 1, 1897.....	6,750.00
8530	Prendergast Bros.....	Galvanized iron and tin work...	2.57
8531	Meyers & Co.....	Repairing clock.....	1.00
8532	J. G. Duggan.....	Sharpening tools.....	2.90
8533	D. Cashill.....	Horseshoeing.....	5.00
8534	St. Paul Furniture Co.....	Repairing office desk.....	2.00
8535	Volkszeitung.....	Advertising.....	.80
8536	F. A. Leyde.....	Rent of portable engine—intake pipe.....	71.40
8537	M. Mealey.....	Canvas to cover boilers.....	3.00
8538	St. Paul Foundry Co.....	Stove for eng. house—Vadnais.....	16.00
8539	Joseph Cartier.....	Rent of engine—intake pipe.....	5.60
8540	Swedburg & Lindquist.....	Iron for pump—intake pipe.....	1.25
8541	Mahle & Sutmar.....	Tools and blacksmithing.....	12.10
8542	S. C. Smith.....	Livery to Centerville.....	5.00
8543	Boerlinger & Son.....	Tracing cloth, ink, etc.....	6.75
8544	Pioneer Press Co.....	Adv. bids for printing annual report.....	3.68
8545	Wyckoff, Seamans & Benedict....	Typewriter supplies.....	19.36
8546	C. Friend & Son.....	Leather for meters and harness fittings.....	4.35
8547	Est. of Jas. Gillfillan.....	Rent of storage lot.....	25.00
8548	Complanter Oil Co.....	Gasoline.....	.60
8549	The Western Supply Co.....	Pig tin, water gauge, etc.....	9.66
8550	H. E. Wedelstedt & Co.....	Stationery, etc.....	9.18
8551	H. C. Boyeson Sta. Co.....	Stationery.....	14.40
8552	Brown, Treacy & Co.....	Blank books, etc.....	27.85
8553	Robinson & Cary Co.....	Pipe covering, etc.....	58.53
8554	Crane & Ordway Co.....	Boiler feed pump, etc., Center-ville.....	95.96
8555	Canceled by city comptroller.....		
8556	Joel T. Million.....	Est. No. 3, pipe laying, Duke street.....	114.92
8557	National Meter Co.....	Est. No. 11, meters.....	645.00
8558	Farwell, Ozmun, Kirk & Co.....	Nails and tools.....	7.60
8559	Canceled by city comptroller.....		
8560	Tierney & Co.....	Feed.....	.58
8561	Foley Bros. & Kelly Merc. Co....	Oil.....	13.36
8562	Joseph Garceau.....	Blacksmithing.....	3.75
8563	Ed. Gregoisse.....	Blacksmithing.....	5.90
8564	Joseph N. Forcier.....	Board, livery, etc., surveyors..	68.70
8565	John Caulfield, secretary.....	Cash advanced.....	68.28
8566	Pioneer Fuel Co.....	Est. No. 3, fuel.....	75.00
8567	N. W. Fuel Co.....	Est. No. 4, fuel.....	948.04
8568	Neptune Meter Co.....	Meters.....	202.85
8569	Ransome Subway Co.....	Lumber.....	7.66
8570	C. L. Horst, city treasurer.....	For investment in water department sinking fund.....	10,000.00
8571	S. Swanson.....	Est. No. 1 and final, wells, Vadnais lake.....	1,095.20
8572	Andrew Falk, for H. J. & A. E. Horn.....	Settlement for damages.....	300.00
	Total.....		\$24,043.18



## LIST OF VOUCHERS—Continued.

MARCH, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8573	C. L. Horst, city treasurer.....	Pay roll for February.....	\$3,227.09
8574	C. L. Horst, city treasurer.....	Interest due April 1, 1897.....	25,000.00
8575	D. L. Bell.....	Cement and cement bags.....	8.05
8576	Jno. Martin Lumber Co.....	Lumber.....	8.00
8577	Union Water Meter Co.....	Meter fixtures.....	14.25
8578	Thomson Meter Co.....	Meter fittings.....	12.90
8579	D. Cardinal.....	Oats.....	15.76
8580	Dispatch Printing Co.....	Advertising.....	3.00
8581	The Washburn Building.....	Electric lighting—Office.....	30.00
8582	Goodyear Rubber Co.....	Hose, etc.....	85.51
8583	South Pk. Found. & Mach. Co....	Repacking hydrant valves, etc.	31.30
8584	Frank Hart, clerk of court, Anoka, Minn.....	Transcripts, Belland et al. vs. Water Board.....	67.50
8585	H. W. Phillips, Asst. Corp. Atty..	Deposit clerk of court Hennepin Co., water board.....	55.00
8586	Jos. Trudeau.....	Tools.....	1.30
8587	A. Lamotte.....	Tamarack timber for intake pipe.....	20.00
8588	Joseph Carkey.....	Rent of portable engine, intake.....	9.90
8589	Dearborn Drug & Chemical Wks.	Cylinder oil.....	21.50
8590	V. R. Benham.....	Engine and cylinder oil.....	6.05
8591	Thos. Brennan Lumber Co.....	Lumber.....	43.68
8592	J. C. Duggan.....	Sharpening tools.....	4.50
8593	H. C. Boyeson Sta. Co.....	Stationery.....	6.70
8594	Wyckoff, Seamans & Benedict.....	Letter book, etc.....	4.65
8595	Brown, Treacy & Co.....	Stationery.....	10.00
8596	Foley Bros. & Kelly Merc. Co.....	Oil, candles, etc.....	8.85
8597	Farwell, Ozmun, Kirk & Co.....	Tools.....	6.99
8598	The Crane & Ordway Co.....	Engine fittings.....	2.55
8599	Estate of Jas. Gillilan.....	Rent of storage lot.....	25.00
8600	Robinson & Cary Co.....	Vacuum Gauges.....	30.10
8601	T. L. Hood & Co.....	Asphalt paint, etc.....	3.05
8602	H. E. Wedelstaedt & Co.....	Stationery.....	8.10
8603	Jno. Rogers, Jr. & Bro.....	Insurance on wood.....	12.00
8604	C. Neumann.....	Meals for officers to Centerville.....	20.00
8605	M. Mealey.....	Cloth for asbestos covering boilers, etc.....	1.08
8606	N. W. Fuel Co.....	Est. No. 5, fuel.....	91.63
8607	Geo. J. Mitsch & Co.....	Supplies.....	7.45
8608	H. M. Smyth Printing Co.....	Job printing.....	7.25
8609	American Holst & Derrick Co.....	Rubber diaphragm for pump.....	4.00
8610	Mitsch Wagon & Carriage Co.....	Repairing cutter.....	3.25
8611	P. N. Lindquist.....	Horse shoeing.....	1.50
8612	Boerlinger & Son.....	Repairing engineer's rods, etc.	6.50
8613	D. L. Bell.....	Cement.....	2.80
8614	Jno. Martin Lumber Co.....	Lumber.....	8.00
8615	J. H. Schurmeier Wag. & Car. Co.	Repainting and repairing bug-gies, etc.....	50.75
8616	Wedelstaedt & Carmen.....	Job printing.....	5.75
8617	Dan Cashill & Co.....	Horseshoeing.....	3.00
8618	Cornplanter Oil Co.....	Gasoline.....	.60
8619	A. & W. McGuiggan.....	Screen frames.....	6.50
8620	Nels Proulx.....	Wood for Centerville station.....	50.00
8621	Leon F. Dupre.....	Wood for Centerville station.....	50.00
8622	Amc. Thon.....	Wood for Centerville station.....	38.75
8623	Henry Dupre.....	Wood for Centerville station.....	37.50
8624	A. Totte.....	Wood for Centerville station.....	30.00
8625	Mich. Gallagher.....	Wood for Centerville station.....	28.75
8626	Severe R. Dufresne.....	Wood for Centerville station.....	62.50
8627	Jno. E. Barrott.....	Wood for Centerville station.....	62.50
8628	Jos. Proulx, Sr.....	Wood for Centerville station.....	34.00
8629	Phillip F. Lamotte.....	Wood for Centerville station.....	62.50
8630	Joseph Krinsner, Jr.....	Wood for Centerville station.....	37.50
8631	Andrew Anderson.....	Wood for Centerville station.....	30.00

## LIST OF VOUCHERS.—Continued.

MARCH 1897—Continued.

NAME.	CLAIM.	Amount.
os. Trudeau .....	Wood for Centerville station..	55.00
no. Boehm .....	Wood for Centerville station..	30.00
Alfred Gagner .....	Wood for Centerville station..	32.00
Napoleon Savigney .....	Wood for Centerville station..	41.00
Michael Zefbel .....	Wood for Centerville station..	37.50
ohn B. Proulx .....	Wood for Centerville station..	30.00
eon Dupre .....	Wood for Centerville station..	58.00
Joseph Garceau .....	Blacksmithing .....	2.50
Joseph Carpenter .....	Nails .....	2.50
A. A. Leyde .....	Rent of portable engine .....	46.50
y. Cardinal .....	Rubble rock .....	28.00
Joseph N. Forcier .....	Board and teaming .....	26.80
Geo. C. Garrow, agent .....	Tires for vault book case .....	2.00
no. Caulfield, secretary .....	Cash advanced .....	50.48
W. H. Ulmer .....	Stone flagging .....	5.50
ransome Subway Co. ....	Est. No. 6, Otter Lake conduit .....	413.29
L. L. Horst, city treasurer .....	Investment in sinking fund .....	15,000.00
V. W. Telephone Ex. Co. ....	Repairing country line .....	4.50
Veptune Meter Co. ....	Meters .....	210.00
National Meter Co. ....	Meters .....	475.00
Lyle M. Fisher .....	Est. No. 1 and final, printing annual report .....	335.80
Total .....		\$46,419.73

## LIST OF VOUCHERS—Continued.

APRIL, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8653	C. L. Horst, city treasurer.....	Pay roll for March.....	\$3,012.17
8654	Union Brass & Metal Mnfg. Co.....	Float and valve.....	3.95
8655	Joseph F. Lamotte.....	Hauling coal from Hugo stati'n	24.40
8656	Foley Bros. & Kelly Merc. Co.....	Oil and candles.....	21.91
8657	T. L. Blood & Co.....	Oil and red lead.....	1.50
8658	Dan Cashill & Co.....	Horseshoeing.....	6.00
8659	Brown, Treacy & Co.....	Stationery.....	32.55
8660	Volkszeitung Publishing Co.....	Advertising.....	2.50
8661	Pioneer Press Co.....	Blank books and advertising.....	15.22
8662	Jos. N. Forcier.....	Board and teaming.....	14.00
8663	J. G. Duggan.....	Sharpening tools.....	8.25
8664	Cornplanter Oil Co.....	Gasoline.....	1.50
8665	Dispatch Printing Co.....	Advertising.....	7.50
8666	Wyckoff, Seamans & Benedict.....	Ribbon for typewriter.....	1.00
8667	Robinson & Cary Co.....	Wire cloth, packing, tools, etc.....	33.08
8668	The Crane & Ordway Co.....	Pipe and pipe fittings.....	23.97
8669	H. E. Wedelstaedt.....	Stationery.....	2.50
8670	H. C. Boyeson Stationery Co.....	Stationery.....	1.50
8671	N. W. Fuel Co.....	Estimate No. 6, fuel.....	233.50
8672	Pioneer Fuel Co.....	Estimate No. 4, coal.....	37.50
8673	Roerlinger & Son.....	Drawing ink.....	.50
8674	Dennis Bernier.....	Wood.....	58.12
8675	Jno. F. Hall.....	Wood.....	30.25
8676	Joseph Arth.....	Wood.....	50.62
8677	Napoleon Morrisette.....	Wood.....	50.00
8678	Charlotte Rogers.....	Wood.....	30.78
8679	Bert Hughes.....	Wood.....	37.90
8680	Sam'l L. Neal.....	Wood.....	23.12
8681	Jos. N. Forcier.....	Wood.....	63.78
8682	Walter P. Jones.....	Wood.....	2.50
8683	Ambrose Brissette.....	Wood.....	7.81
8684	John Leibel.....	Wood.....	5.00
8685	J. H. Schurmler Wagon & Car. Co.....	Oil carpet for buggy.....	1.00
8686	Kenny Bros.....	Repairing boiler.....	5.50
8687	Farwell, Ozmun, Kirk & Co.....	Nails, etc.....	37.09
8688	The Globe Co.....	Advertising.....	3.00
8689	Mitsch Wagon & Carriage Co.....	Painting and repairing buggies.....	32.55
8690	Jno. Martin Lumber Co.....	Lumber.....	20.17
8691	Estate of Jas. Gilfillan.....	Rent of storage lot.....	25.00
8692	Frank Skok.....	Steel pointing picks.....	5.40
8693	N. W. Copper & Brass Works.....	Repairing water gauge.....	.50
8694	O. J. Plette.....	Weighing coal.....	1.50
8695	John A. Lavallee.....	Board of Shouse.....	3.50
8696	The Crane & Ordway Co.....	Estimate No. 1 and final, lead pipe and block tin.....	1,573.61
8697	John Caulfield, secretary.....	Cash advanced.....	94.02
8698	C. L. Horst, city treasurer.....	Interest due May 1, 1897.....	8,750.00
8699	The E. P. Allis Co.....	Suction pipe, 36-inch.....	63.45
8700	Union Brass & Metal Mnfg. Co.....	Valves.....	8.00
8701	The E. P. Allis Co.....	Estimate No. 2, pump engine.....	5,000.00
	Total.....		\$19,505.90

## LIST OF VOUCHERS—Continued.

MAY, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8702	C. L. Horst, city treasurer.....	Pay roll for April 1897.....	\$3,199.36
8703	Gribben Lumber Co.....	Lumber.....	80.00
8704	Thos. Brennan Lumber Co.....	Lumber.....	17.44
8705	H. G. Neal.....	Covers for buggies.....	5.00
8706	J. H. Sherman.....	Hay.....	37.50
8707	Lovene & Anderson.....	Refund on account connection.....	2.65
8708	F. Isaac.....	Refund on account connection.....	4.30
8709	Otto Schaller.....	Refund on account connection.....	.50
8710	The London & N. W. Am. Mtg. Co.....	Refund on account connection.....	1.95
8711	Mrs. C. Carlson.....	Refund on account connection.....	1.65
8712	M. E. Wallish.....	Refund on account connection.....	1.65
8713	Wm. F. Colton.....	Refund on account connection.....	4.30
8714	T. J. Kelly.....	Refund on account connection.....	1.30
8715	Wm. Schornstein.....	Refund on account connection.....	4.30
8716	Franklin Hofer.....	Refund on account connection.....	.50
8717	Standard Oil Co.....	Oil.....	3.00
8718	N. W. Electric Co.....	Connecting new commutator.....	8.00
8719	Robinson & Cary Co.....	Pump and couplings.....	59.61
8720	Farwell, Ozmun, Kirk & Co.....	Powder and tools.....	7.50
8721	D. L. Bell.....	Lime and cement.....	6.25
8722	The Western Supply Co.....	Plumbers' furnace, valves, etc.....	4.20
8723	H. E. Wedelstaedt & Co.....	Stationery and printing.....	20.25
8724	Brown, Treacy & Co.....	Printing and stationery.....	3.15
8725	Wyckoff, Seamans & Benedict.....	Typewriter supplies.....	1.05
8726	H. C. Boyeson Stationery Co.....	Stationery.....	10.70
8727	St. Paul Rubber Co.....	Rubber boots.....	2.25
8728	Chas. Friend & Son.....	Leather.....	3.75
8729	De Coster & Clark.....	Table for stenographer.....	1.20
8730	Cornplanter Oil Co.....	Gasoline.....	46.43
8731	South Park Foundry & Mach. Co.....	Valves and special castings.....	20.97
8732	Nicols & Dean.....	Machine bolts and washers.....	83.61
8733	N. W. Fuel Co.....	Estimate No. 7, fuel.....	11.25
8734	Wedelstaedt & Carmen.....	Job printing.....	15.00
8735	Pioneer Fuel Co.....	Estimate No. 5, fuel.....	.25
8736	A. Decker & Co.....	Hardware.....	86.83
8737	Pioneer Press Co.....	Job printing, blank books and advertising.....	5.85
8738	Geo. J. Mitsch & Co.....	Supplies for barn, etc.....	8.70
8739	Jos. N. Forcier.....	Teaming and board.....	20.58
8740	Viscosity Oil Co.....	Cylinder oil.....	2.00
8741	Diebold Safe & Lock Co.....	Clamps for vault files.....	67.19
8742	The Crane & Ordway Co.....	Pipe and pipe fittings.....	23.63
8743	Thos. Brennan Lumber Co.....	Lumber.....	3.95
8744	J. G. Duggan.....	Sharpening tools, etc.....	58.68
8745	Mahle & Sutmar.....	New wagon, blacksmithing, etc.....	24.00
8746	Fire and water.....	Advertising for pump.....	47.90
8747	South Park Foundry & Mach. Co.....	Gate valves.....	60.14
8748	John Caulfield, secretary.....	Cash advanced.....	6.00
8749	D. Cashill.....	Horseshoeing.....	25.00
8750	Estate of Jas. Gilfillan.....	Rent of storage lot.....	44.85
8751	National Meter Co.....	Meter parts.....	5.00
8752	D. D. Smith, agent.....	Electric light.....	
8753	Patrick Doherty.....	Estimate No. 6 and final, laying water pipe.....	344.05
8754	Fairbanks, Morse & Co.....	Estimate No. 4 and final, laying 36-inch pipe.....	651.11
8755	John Kenny.....	Estimate No. 2 and final, boilers McCarron lake.....	176.50
8756	E. W. Bazille.....	Abstracts of title.....	13.60
8757	Geo. J. Mitsch & Co.....	Linseed meal.....	1.80
8758	D. D. Smith, agent.....	Electric light.....	5.00
8759	P. N. Lindquist.....	Horseshoeing.....	2.00
8760	D. F. De Wolf.....	Oats.....	41.63
8761	Boerlinger & Son.....	Drawing material.....	2.40
8762	Jno. Martin Lumber Co.....	Lumber and tamarack poles.....	18.67



## LIST OF VOUCHERS—Continued.

MAY, 1897—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8763	A. & W. McGuiggan.....	Moving storm sash.....	1.80
8764	Mitsch Wagon & Carriage Co....	Blacksmithing .....	8.55
8765	Bingham & Taylor.....	Estimate No. 1, valve boxes..	227.45
8766	Anthony P. Smith.....	Estimate No. 4, patent sleeves and valves .....	92.00
8767	Joseph Arth.....	Wood .....	21.71
8768	Aug. Rehbein.....	Wood .....	20.63
8769	Warren-Scharf Asphalt Pav. Co..	Repairing pavement .....	17.29
8770	The Engineering Record.....	One year's subscription .....	5.00
8771	Jos. A. Forcier.....	Board for surveyors .....	7.41
8772	Allen & Co. ....	Livery .....	5.00
8773	National Meter Co. ....	Meter fixtures .....	15.00
8774	The Dwyer Plumbing & Heat. Co.	Estimate No. 1, service boxes..	925.00
8775	Napoleon Savigney.....	Tamarack piling .....	45.50
8776	South Park Foundry & Mach. Co.	Valves and special castings....	58.00
8777	C. L. Horst, city treasurer.....	Interest on bonds due June 1, 1897 .....	7,000.00
	Total .....		<u>\$13,874.71</u>

## LIST OF VOUCHERS—Continued.

JUNE, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8778	C. L. Horst, city treasurer.....	Pay roll for May, 1897.....	\$4,225.76
8779	Pioneer Press Co.....	Blank books and advertising...	30.56
8780	Wyckoff, Seamans & Benedict....	Typewriter supplies .....	10.74
8781	The Western Supply Co.....	Solder nipples .....	6.15
8782	St. Paul Foundry Co.....	Gates, box covers.....	10.69
8783	D. D. Smith, agent.....	Electric light .....	5.00
8784	Thos. Brennan Lumber Co.....	Lumber .....	93.20
8785	Board of Fire Commissioners....	Condemned hose .....	100.00
8786	Jno. Martin Lumber Co.....	Lumber .....	34.60
8787	Gribben Lumber Co.....	Lumber .....	91.00
8788	And. Schoch Grocery Co.....	Kleinsall .....	4.00
8789	Brown, Treacy & Co.....	Stationery .....	2.53
8790	The Crane & Ordway Co.....	Estimate No. 1, brass goods..	254.31
8791	The Crane & Ordway Co.....	Pipe fittings .....	12.81
8792	Farwell, Ozmun, Kirk & Co.....	Powder, fuse and tools.....	21.90
8793	Robinson & Cary Co.....	Tools .....	18.25
8794	Foley Bros. & Kelly Mer. Co.....	Oil, matches, etc.....	9.08
8795	A. Decker & Co.....	Barb wire and staples.....	2.65
8796	St. Paul Rubber Co.....	Rubber bumpers .....	.35
8797	T. L. Blood & Co.....	Paint .....	4.43
8798	Roberts-Goss Co.....	Tapping nuts .....	1.00
8799	Dan Cashill .....	Horseshoeing .....	6.00
8800	H. C. Boyeson Stationery Co....	Stationery .....	1.30
8801	Chas. Friend & Son.....	Rubber blanket, etc.....	2.65
8802	St. Paul Stone Co.....	Cement tiling .....	4.80
8803	H. E. Wedelstaedt & Co.....	Stationery .....	10.08
8804	N. W. Fuel Co.....	Estimate No. 8, fuel.....	972.47
8805	Wedelstaedt & Carmen.....	Stationery .....	14.00
8806	Goodyear Rubber Co.....	Yerdon's clamps.....	5.32
8807	P. N. Lindquist.....	Horseshoeing .....	2.00
8808	Martin Feist .....	Lunch for men cleaning conduit	3.50
8809	H. M. Smyth Printing Co.....	Books .....	4.50
8810	Joseph Garceau.....	Blacksmithing .....	8.50
8811	J. Lavallo .....	Board of foreman .....	22.50
8812	J. N. Forcier.....	Board of men and stabling....	19.15
8813	Pittsburg Meter Co.....	Meters and connections.....	24.25
8814	S. C. Smith.....	Livery to Centerville.....	12.50
8815	Jno. Caulfield, secretary.....	Cash advanced .....	41.77
8816	Estate of Jas. Gillilan.....	Rent of storage lot.....	25.00
8817	Kenny Bros.....	Labor repairing boiler.....	9.00
8818	Nicols & Dean.....	Steel, etc.....	2.85
8819	J. G. Duggan.....	Blacksmithing .....	2.60
8820	C. L. Horst, city treasurer.....	Interest due July 2, 1897....	5,850.00
8821	Allen & Co.....	Livery .....	10.00
8822	H. M. Smyth Printing Co.....	Connection reports .....	4.50
8823	Minnesota Engine Works.....	Machine work, Centerville....	5.02
8824	Mitsch Wagon & Carriage Co....	Blacksmithing .....	3.23
8825	St. Paul Foundry Co.....	Casting, Centerville p' mp house	10.20
8826	N. W. Stamp Works.....	Stamps and wood cut.....	2.00
8827	D. L. Bell.....	Cement .....	2.80
8828	Michigan Brass & Iron Works....	Automatic drip valves.....	96.00
8829	The Engineering News Pub. Co....	Advertising pumps, etc.....	34.20
8830	Bingham & Taylor.....	Base for stop cock boxes.....	8.00
8831	Thomson Meter Co.....	Meter fixtures .....	5.15
8832	Neptune Meter Co.....	Meter fixtures .....	3.30
8833	Napoleon Savigney.....	Tamarack piling .....	8.64
8834	M. F. Brennan.....	Livery .....	6.50
8835	South Park Foundry & Mach. Co.	Pile driver hammer and tees..	27.38
8836	South Park Foundry & Mach. Co.	Estimate No. 1, valves.....	7.00
8837	H. W. Phillips.....	Expense, court fees, Hennepin county .....	19.05

## ANNUAL REPORT OF WATER COMMISSIONERS

## LIST OF VOUCHERS—Continued.

JUNE 1897—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
8838	C. A. Fuller.....	Estimate No. 1 and final, pig lead.....	518.93
8839	The Crane & Ordway Co.....	Estimate No. 2, brass gcods...	250.53
8840	Jno. Caulfield, secretary.....	Cash advanced.....	174.89
8841	J. W. Cunningham & Co.....	Job printing.....	14.75
8842	Foley Bros. & Kelly Mer. Co....	Candles.....	4.80
8843	Cornplanter Oil Co.....	Oil and gasoline.....	32.71
8844	T. L. Blood & Co.....	Paint.....	1.70
8845	P. H. Thornton.....	Estimate No. 1, laying mains..	321.75
8846	C. L. Horst, city treas.....	Sinking fund investment.....	50,000.00
	Total .....		\$63,556.95

## LIST OF VOUCHERS—Continued.

JULY, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8847	C. L. Horst, city treasurer.....	Pay roll for June.....	\$3,945.42
8848	C. L. Horst, city treasurer.....	Interest due Aug. 1, 1897.....	3,750.00
8849	O. J. Plette.....	Hay .....	23.52
8850	Jno. Fitzgerald, superintendent..	Brooms .....	2.00
8851	Henry Orme .....	Estimate No. 1, special cast- ings .....	135.00
8852	Wedelstaedt & Carmen.....	Receipt blanks, etc.....	4.75
8853	Arnold Uhler .....	Mails and handles.....	3.00
8854	St. Paul Gaslight Co.....	Lamp shade.....	2.50
8855	Jos. A. Forcier.....	Board and livery.....	29.10
8856	Pioneer Press Co.....	Advertising for fuel.....	3.91
8857	Geo. J. Mitsch & Co.....	Supplies .....	1.90
8858	Jos. F. Lamotte.....	Estimate No. 1, fencing.....	451.00
8859	Jos. F. Lamotte.....	Estimate No. 2 and final, fenc- ing .....	252.71
8860	N. W. Fuel Co.....	Estimate No. 9, fuel 1896.....	99.70
8861	N. W. Fuel Co.....	Estimate No. 1, fuel 1897.....	61.92
8862	H. C. Boyeson Stationery Co.....	Stationery .....	5.65
8863	Thos. Brennan Lumber Co.....	Lumber .....	71.83
8864	H. E. Wedelstaedt & Co.....	Envelopes .....	6.40
8865	Smith & Farwell Co.....	Office stool .....	2.25
8866	Mitsch Wagon & Carriage Co.....	Sharpening tools.....	2.89
8867	P. N. Lindquist.....	Horseshoeing .....	2.50
8868	Dan Cashill & Co.....	Horseshoeing .....	6.00
8869	Fielding & Shepley.....	Relaying pavement.....	4.43
8870	John Martin Lumber Co.....	Lumber .....	58.79
8871	Robt. W. Hunt & Co.....	Inspecting pipe at foundry.....	51.50
8872	Brown, Treacy & Co.....	Stationery .....	1.58
8873	Cornplanter Oil Co.....	Gasoline .....	1.20
8874	Chas. Friend & Son.....	Leather washers .....	.20
8875	A. Decker & Co.....	Hardware .....	5.37
8876	Foley Bros. & Kelly Mer. Co.....	Oil and candles.....	26.50
8877	Robinson & Cary Co.....	Wire rope and tools.....	15.40
8878	Estate of Jas. Gilfillan.....	Rent of storage lot.....	25.00
8879	The Crane & Ordway Co.....	Estimate No. 3, brass goods....	24.73
8880	The Crane & Ordway Co.....	Galvanized iron pipe, etc.....	32.03
8881	Farwell, Ozmun, Kirk & Co.....	Powder, tools, etc.....	20.13
8882	Mahle & Sutmar.....	Seat and cushion hydrant wagon .....	4.00
8883	J. H. Shurmeier Wagon & C. Co..	Buggy spring and repairs.....	4.25
8884	N. W. Stamp Works.....	Stamp .....	.50
8885	J. G. Dugan.....	Sharpening tools, etc.....	2.65
8886	D. L. Bell.....	Cement .....	56.35
8887	Boeringer & Son.....	One gauge level.....	1.25
8888	Minnesota Engine Works.....	Sharpening lawn mowers.....	2.50
8889	St. Paul Sash, Door & Lumber Co.	Hydrant boxes.....	7.20
8890	South Pittsburg Pipe Works.....	Estimate No. 1, cast iron pipe..	2,892.47
8891	Tierney & Co.....	Feed .....	1.73
8892	Michigan Brass & Iron Works....	Brass drip valves.....	78.00
8893	P. H. Thornton.....	Estimate No. 2 and final, pipe laying .....	58.65
8894	Fairbanks, Morse & Co.....	Estimate No. 1, pipe laying....	585.90
	Total .....		\$12,826.26



## LIST OF VOUCHERS—Continued.

SEPTEMBER, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
8969	Thos. Rashak.....	Blasting timbers .....	8.75
8970	South Park Foundry & Mach. Co.	Estimate No. 1, sprinkler attachment .....	288.00
8971	T. Vandlac.....	Estimate No. 14, hauling coal Vadnais lake .....	27.85
8972	Olzenski & Romans.....	Meals testing pumps, Centerville .....	53.50
8973	St. Paul Furniture Co.....	Repairing office stool .....	1.00
8974	St. Paul Lime & Cement Co.....	Sewer brick .....	9.12
8975	N. W. Telephone Exchange Co.	Rent telephones, private line .....	25.00
8976	N. W. Shot & Lead Works.....	Lead pipe .....	19.35
8977	John Kenny.....	Weir plate for Vadnais lake .....	45.75
8978	National Meter Co.....	Meter fittings .....	6.00
8979	Pittsburg Meter Co.....	Meters .....	568.00
8980	The E. P. Allis Co.....	Estimate No. 3, pump, Centerville .....	5,000.00
8981	F. W. Luley & Son.....	Tallow .....	1.80
8982	Thos. Brennan Lumber Co.....	Lumber Vadnais Lake engine house .....	41.60
8983	South Park Foundry & Mach. Co.	Estimate No. 1, fire hydrants .....	130.00
8984	South Park Foundry & Mach. Co.	Estimate No. 4, valves .....	125.75
8985	South Pittsburg Pipe Works.....	Estimate No. 2, pipe .....	3,404.83
8986	H. A. Muckle Mfg. Co.....	Buggy .....	76.00
8987	Scribner-Libby Co.....	Repairing roof etc .....	35.56
8988	James Shiely .....	Hauling brick, Cardigan Junction .....	9.75
8989	James Shiely .....	Estimate No. 1, drainage .....	172.50
8990	C. L. Horst, city treasurer.....	Pay roll for August .....	4,056.31
8991	C. L. Horst, city treasurer.....	Interest due Oct. 1, 1897 .....	25,000.00
8992	South Pittsburg Pipe Works.....	Est. No. 3, pipe .....	856.81
8993	Flint and Water .....	Subscription to April 25, 1898 .....	3.00
8994	Pioneer Press Co.....	Job printing .....	35.37
8995	P. N. Lindquist.....	Horse shoeing .....	5.50
8996	Adam Decker & Co.....	Hardware .....	15.50
8997	Reichow Bros.....	Omnibus and four horses to Centerville .....	8.00
8998	Washburn building .....	Electric light .....	5.00
8999	Minnesota Engine Works.....	Machine work .....	3.50
9000	St. Paul Lime & Cement Co.....	Sewer pipe .....	18.00
9001	Thos. Brennan Lumber Co.....	Lumber .....	5.83
9002	J. G. Duggan.....	Blacksmithing .....	6.10
9003	Dan Cashill.....	Horse shoeing .....	2.00
9004	Wedelstaedt & Carmen.....	Job printing .....	6.50
9005	Estate of Jas. Gilfillan.....	Rent of storage lot .....	25.00
9006	Allen & Co.....	Livery .....	7.00
9007	Boerlinger & Son.....	Drawing material .....	4.25
9008	Tierney & Co.....	Feed .....	.98
9009	Jos. N. Forcier.....	Board and stabling .....	30.44
9010	South Park Foundry & Mach. Co.	Est. No. 2, sluice gate .....	175.00
9011	South Park Foundry & Mach. Co.	Est. No. 2, fire hydrants .....	472.50
9012	H. C. Boyeson Sta. Co.....	Stationery .....	2.75
9013	The Western Supply Co.....	Pipe fittings .....	1.78
9014	Cornplanter Oil Co.....	Gasoline, etc. ....	7.08
9015	Franklin Machine Works.....	Sharpening drill .....	.75
9016	Nicols & Dean.....	Iron and bolts .....	5.32
9017	Foley Bros. & Kelly Merc. Co.	Tea lead, etc. ....	27.76
9018	Farwell, Ozmun, Kirk & Co.	Powder, nails, etc. ....	5.95
9019	Ogden, Merrill & Greer.....	Lantern fixtures .....	.51
9020	Brown, Treacy & Co.....	Stationery .....	3.35
9021	Wyckoff, Seamans & Benedict...	Type-writer supplies .....	1.50
9022	H. E. Wedelstaedt & Co.....	Stationery .....	18.66
9023	Smith & Farwell Co.....	Office chairs .....	8.90
9024	N. W. Fuel Co.....	Est. No. 1, fuel .....	75.77
9025	The Crane & Ordway Co.....	Pipe, pipe fittings, etc. ....	28.03
9026	Robt. W. Hunt & Co.....	Inspecting pipe .....	60.86

## LIST OF VOUCHERS—Continued.

SEPTEMBER, 1897—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
9027	Mitsch Wagon & Car. Co.....	Blacksmithing .....	2.28
9028	D. L. Bell.....	Cement .....	43.45
9029	Geo. J. Mitsch & Co.....	Supplies .....	13.55
9030	Robinson & Cary Co.....	Valves, waste, etc.....	75.17
9031	Henry Orme .....	Est. No. 3, special castings....	291.16
9032	American Hoist & Derrick Co....	Two 12-inch iron blocks.....	6.50
9033	Jno. Martin Lumber Co.....	Lumber and posts .....	47.73
9034	Jno. Caulfield, secretary.....	Cash advanced .....	94.05
9035	C. Neumann .....	Meals, account right of way suit .....	18.90
9036	South Park Foun. & Mach. Co...	Est. No. 5, valves.....	60.50
9037	S. C. Smith.....	Team to Centerville.....	15.50
9038	Pittsburg Meter Co.....	Est. No. 3, meters.....	400.00
9039	Fairbanks, Morse & Co.....	Est. No. 2, laying water pipe, etc.....	1,253.09
	Total .....		\$43,367.78

## LIST OF VOUCHERS—Continued.

OCTOBER, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
9040	C. L. Horst, city treasurer.....	Interest on bonds due Nov. 1, 1897.....	\$8,750.00
9041	South Park Foun. & Mach. Co..	Est. No. 6, valves.....	478.00
9042	South Park Foun. & Mach. Co..	Est. No. 3, fire hydrants.....	155.00
9043	Pioneer Press Co.....	Job printing.....	60.75
9044	St. Paul Lime & Cement Co.....	Drain tile.....	12.00
9045	Thos. Brennan Lumber Co.....	Lumber.....	58.87
9046	Boerlinger & Son.....	Repair Eng. instruments.....	5.05
9047	St. Paul & Duluth R. R. Co.....	Freight on Venturi meter.....	51.50
9048	Chas. Friend & Son.....	Saddlery, hardware, etc.....	1.25
9049	Bohn Mfg. Co.....	Two slat doors.....	4.00
9050	Griggs Bros.....	Hay.....	21.28
9051	E. A. Brown.....	Nickel timer to test wells.....	7.50
9052	A. W. McGuiggan.....	Map trays, etc.....	3.65
9053	John A. Lavallee.....	Board foreman.....	3.75
9054	Fielding & Shepley.....	Repairing pavement.....	85.55
9055	E. Sawyer, treas. G. N. R. R. Co.	Labor, Rice street main.....	6.04
9056	Pittsburg Meter Co.....	Est. No. 4, meters.....	400.00
9057	South Park Foundry.....	Hydrant tops, etc.....	30.44
9058	C. L. Horst, city treasurer.....	Pay roll for September.....	4,188.09
9059	A. Decker & Co.....	Nails and tools.....	5.16
9060	Washburn Building.....	Electric light.....	5.00
9061	Dan Cashill & Co.....	Horse shoeing.....	4.00
9062	D. L. Bell.....	Cement.....	354.70
9063	J. G. Duggan.....	Blacksmithing.....	6.05
9064	Chas. Friend & Son.....	Harness fittings.....	4.40
9065	P. N. Lindquist.....	Horse shoeing.....	4.00
9066	Farwell, Ozmun, Kirk & Co.....	Hardware.....	.25
9067	M. F. Brennan.....	Livery.....	2.00
9068	Nimis & Meyer.....	Wire, etc.....	5.40
9069	Diebold Safe & Lock Co.....	Changing combination safe.....	1.00
9070	Schoffer & Rossum.....	Leather for dash pots.....	1.20
9071	Cornplanter Oil Co.....	Gasoline.....	1.20
9072	T. L. Blood & Co.....	Oil, brush, etc.....	1.88
9073	The Western Supply Co.....	Pig tin, pipe, etc.....	44.54
9074	Brown, Treacy & Co.....	Stationery.....	9.23
9075	St. Paul Furniture Co.....	Stationery cabinet, etc., office.....	33.50
9076	Wyckoff, Seamans & Benedict.....	Typewriter supplies.....	9.35
9077	H. C. Boyeson Sta. Co.....	Stationery.....	8.00
9078	H. E. Wedelstaedt & Co.....	Stationery.....	4.78
9079	Boerlinger & Co.....	Drawing material.....	1.25
9080	Foley Bros. & Kelly Merc. Co.....	Oil, soap and lye.....	27.99
9081	N. W. Fuel Co.....	Est. No. 12 and final, fuel, 1896.....	382.88
9082	Henry Orme.....	Est. No. 4, special castings.....	22.29
9083	South Park Foundry & Mach. Co.	Est. No. 7, valves.....	30.25
9084	South Park Foundry & Mach. Co.	Est. No. 4, fire hydrants.....	31.00
9085	South Park Foundry & Mach. Co.	Machine work.....	10.54
9086	Crane & Ordway Co.....	Pipe fittings.....	11.51
9087	Robinson & Cary Co.....	Pipe fittings.....	38.58
9088	Est. of Jas. Gillilan.....	Rent of storage lot.....	25.00
9089	Jno. Martin Lumber Co.....	Lumber for meter boxes, etc.....	62.56
9090	Pittsburg Meter Co.....	Meters.....	400.00
9091	C. W. Peterson.....	Taking care of boat, Lake Phalen.....	2.00
9092	The Dwyer Heat. & Plumb. Co.	Est. No. 2, service boxes.....	18.50
9093	Bingham & Taylor.....	Est. No. 2, valve boxes.....	378.24
9094	Jas. Shiley.....	Est. No. 2, drayage.....	15.61
9095	Jas. Shiley.....	Hauling pumps, Baldwin Lake to St. Paul.....	5.00
9096	E. A. Layde.....	Rent of engine.....	21.75
9097	Union Brass & Metal Mfg. Co.	Brass work.....	4.00
9098	Peter Johnson.....	Gravel for reservoir weir.....	78.75
9099	E. W. Bazille abstract clerk.....	Abstracts.....	4.90
9100	Jos. N. Forster.....	Board, account right of way.....	14.30
9101	S. C. Smith.....	Livery to Centerville.....	3.50
9102	Pioneer Press Co.....	Covers for meter bills.....	11.50
9103	The Samuel Carmen Printing Co.	Printing postal cards.....	2.00

## LIST OF VOUCHERS—Continued.

OCTOBER, 1897—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
9104	The Globe Co.....	Advertising—Dates discounts..	\$4.00
9105	The Dispatch Printing Co.....	Advertising discounts .....	6.00
9106	Mitsch Wagon and Carriage Co..	Blacksmithing .....	19.18
9107	W. H. Bregger.....	Cleaning chimneys, McCarron lake .....	8.00
9108	Dearborn Drug & Chem. Co.....	Oil .....	21.15
9109	N. Feyen .....	Est. No. 5 and final, Centerville contract, 1896 .....	7.38
9110	N. Feyen .....	Est. No. 3 and final, grading contract, 1896 .....	50.00
9111	W. H. Jackson.....	Est. No. 1, dwelling, Center- ville .....	510.00
9112	Fairbanks, Morse & Co.....	Est. No. 3, pipe laying .....	1,672.88
9113	The Gillette-Herzog Mnfg. Co...	Est. No. 1 and final, weir reser- voir .....	446.82
9114	Fielding & Shepley .....	Relaying pavement .....	842.83
9115	John Caulfield, secretary.....	Cash advanced .....	53.16
9116	J. H. Schurmeler Car. Co.....	Repairing pipe cart.....	10.00
	Total .....		\$20,087.69



## LIST OF VOUCHERS—Continued.

NOVEMBER, 1897.

No. of Voucher.	NAME.	CLAIM.	
9117	C. L. Horst, city treasurer.....	Interest due Dec. 1, 1897.....	\$
9118	Jno. Caulfield, secretary.....	Cash advanced.....	
9119	South Park Foundry & Mach. Co.....	Est. No. 3, sluice gate.....	
9120	St. Paul Stone Co.....	Sidewalk tile.....	
9121	Pioneer Press Co.....	Job printing.....	
9122	Viscosity Oil Co.....	Oil.....	
9123	The Menomonic Pressed Brick Co.....	Brick.....	
9124	Bohn Mfg. Co.....	Lumber.....	
9125	Griggs Bros.....	Oats.....	
9126	Robinson & Cary Co.....	Pig lead.....	
9127	J. H. Schurmeier Wag. & Car. Co.....	Repair pipe wagon.....	
9128	Thos. Brennan Lumber Co.....	Lumber.....	
9129	St. Paul Lime & Cement Co.....	Sewer brick.....	
9130	C. L. Horst, city treasurer.....	Pay roll for October, 1897.....	
9131	Robinson & Cary Co.....	Powder, tools and pipe fittings.....	
9132	St. Paul Rubber Co.....	Rubber boots.....	
9133	H. E. Wedelstaedt & Co.....	Stationery.....	
9134	Thompson Rubber Co.....	Tubing.....	
9135	Farwell, Ozmun, Kirk & Co.....	Powder, nails, etc.....	
9136	Crane & Ordway Co.....	Pipe fittings.....	
9137	Foley Bros. & Kelly Merc. Co.....	Oil, candles, etc.....	
9138	Brown Tracy & Co.....	Pencils.....	
9139	Wyckoff, Seamans & Benedict.....	Typewriter supplies.....	
9140	H. C. Joyeson Sta. Co.....	Stationery.....	
9141	Thos. Brennan Lumber Co.....	Lumber.....	
9142	P. N. Lindquist.....	Horseshoeing.....	
9143	W. H. Ulmer.....	Stone for reservoir weir.....	
9144	Barney Building.....	Light Oct. 10 to Nov. 10.....	
9145	N. W. Stamp Works.....	Stencil and dies.....	
9146	N. W. Copper & Brass Works.....	Copper floats.....	
9147	And. Martinson.....	Brick work—Reservoir weir.....	
9148	St. Paul Lime & Cement Co.....	Sewer pipe.....	
9149	N. W. Telephone Ex. Co.....	Repairing private line.....	
9150	Pioneer Press Co.....	Rebinding books, etc.....	
9151	Jos. N. Forcier.....	Board of men.....	
9152	Rundle-Spence Mfg. Co.....	Alabama wrenches.....	
9153	Blackner & Post Pipe Co.....	Culvert pipe.....	
9154	The Palace Furn. & Carpet Co.....	Desk—McCarron's Lake station.....	
9155	Smith & Farwell Co.....	Office stool.....	
9156	Chas. Friend & Son.....	Saddle pad—Harness.....	
9157	Adam Decker & Co.....	Hardware.....	
9158	The Globe Co.....	Advertising.....	
9159	Boeringer & Son.....	Mounting weir design.....	
9160	N. W. Engineering Co.....	Rubber tape.....	
9161	F. W. Luley & Son.....	Beef tallow.....	
9162	Jno. Martin Lumber Co.....	Lumber.....	
9163	Mitsch Wagon & Carriage Co.....	Blacksmithing, etc.....	
9164	J. G. Duggan.....	Sharpening tools.....	
9165	D. L. Bell.....	Cement.....	
9166	Cornplanter Oil Co.....	Oil.....	
9167	Allen & Co.....	Livery.....	
9168	Daniel Cashill & Co.....	Horseshoeing.....	
9169	Wis. Central R. R. Co.....	Freight.....	
9170	Est. of Jas. Giffillan.....	Rent of storage lot.....	
9171	Nicols & Dean.....	Nuts, bolts and washers.....	
9172	Diebold Safe & Lock Co.....	Lock work.....	
9173	N. W. Shot & Lead Wks.....	Lead pipe.....	
9174	Bohn Mfg. Co.....	Lumber.....	
9175	St. Paul Foundry Co.....	Special castings.....	
9176	Henry Orme.....	Est. No. 5—Special castings.....	
9177	W. H. Jackson.....	Est. No. 2—Dwelling, Center- ville.....	
9178	Theophile Vandiac.....	Est. No. 5—Hauling coal to Vadnais.....	
9179	The Samuel Carman Printing Co.....	Job printing.....	
9180	Prendergast Bros.....	Plumbing.....	
9181	N. W. Fuel Co.....	Est. No. 2—Fuel.....	
9182	Lefebvre Roofing and Cornice Co.....	Roof for reservoir weir.....	
9183	Jas. Shiely.....	Est. No. 3—Drayage.....	
9184	F. A. Leyde.....	Rent of portable engine.....	
9185	Jno. Caulfield, secretary.....	Cash advanced.....	
9186	Fairbanks, Morse & Co.....	Est. No. 4—Laying water pipe.....	
	Total.....		\$1

## LIST OF VOUCHERS—Continued.

DECEMBER, 1897.

No. of Voucher.	NAME.	CLAIM.	Amount.
9187	M. F. Brennan.....	Livery .....	\$2.00
9188	Thomas Brennan Lumber Co....	Lumber .....	\$2.01
9189	Clement Cardinal, Jr.....	Sand for Centerville house.....	6.50
9190	American Hoist & Derrick Co....	Guy cap, clip, etc.....	6.30
9191	The People's Ice Co.....	Ice for office.....	9.25
9192	T. L. Blood & Co.....	Red lead in oil.....	1.44
9193	S. C. Smith.....	Livery—Centerville .....	3.00
9194	St. Paul Lime & Cement Co.....	Sewer brick .....	21.00
9195	W. J. Sonnen, assignee.....	Miscellaneous supplies .....	11.30
9196	John Fitzgerald, superintendent..	Brooms .....	4.40
9197	The Eng. News Pub. Co.....	Manual, American water works ..	7.20
9198	Bohn Mfg. Co.....	Doors and window frames.....	8.60
9199	Union Brass & Metal Mfg. Co.....	Corporation stops .....	10.80
9200	J. H. Schurmeier Wag. & Car. Co.	Wheels for meter wagon.....	10.00
9201	Jameson, Hevener & Co.....	Hay .....	26.22
9202	W. H. Jackson.....	Est. No. 3 and final—House, Centerville .....	539.00
9203	C. L. Horst, city treasurer.....	Pay roll for November, 1897.....	3,732.72
9204	D. L. Bell.....	Cement .....	38.40
9205	P. N. Lindquist.....	Horseshoeing .....	7.00
9206	J. G. Duggan.....	Sharpening tools .....	2.65
9207	Peter Johnson.....	Sand and gravel.....	6.30
9208	H. J. Neal .....	Repairing awnings, etc.....	1.75
9209	N. W. Shot & Lead Works.....	Lead pipe .....	49.69
9210	S. C. Smith.....	Livery to Centerville.....	6.50
9211	H. Pepin .....	Labor on wells.....	1.50
9212	Jos. Garceau .....	Blacksmithing .....	18.90
9213	Joseph N. Forcier .....	Board and stabling.....	2.91
9214	Thos. Brennan Lumber Co.....	Lumber .....	6.77
9215	Daniel Cashill & Co.....	Horseshoeing .....	6.00
9216	Cornplanter Oil Co.....	Gasoline .....	1.80
9217	Minnesota Eng. Works.....	Machine work .....	1.60
9218	Jno. Martin Lumber Co.....	Lumber .....	51.93
9219	The Globe Co.....	Advertising .....	1.00
9220	The Dispatch Printing Co.....	Advertising .....	3.00
9221	Pioneer Press Co.....	Advertising .....	1.50
9222	A. & W. McGuiggan .....	Carpenter work .....	6.75
9223	M. F. Brennan.....	Livery .....	5.50
9224	Tierney & Co.....	Feed .....	5.55
9225	H. C. Boyeson Sta. Co.....	Stationery .....	4.75
9226	Wyckoff, Seamans & Benedict....	Stationery .....	2.90
9227	Brown, Treacy & Co.....	Stationery .....	2.08
9228	H. E. Wedelstaedt & Co.....	Stationery .....	10.43
9229	St. Paul Co-Op. Painting Co.....	Painting and whitewashing.....	15.25
9230	N. W. Fuel Co.....	Est. No. 3—Fuel.....	882.66
9231	Est. of Jas. Gillilan.....	Rent of storage lot.....	25.00
9232	Allen & Co.....	Livery .....	10.50
9233	The Western Supply Co.....	Lead pipe .....	93.14
9234	Nicols & Dean.....	Machine bolts and washers.....	1.64
9235	Theophile Vandiac.....	Est. No. 16—Hauling coal.....	10.75
9236	Brown, Treacy & Co.....	Printing law briefs.....	36.50
9237	Ogden, Merrill & Greer.....	Candle wick .....	.34
9238	Robinson & Cary Co.....	Galv. lead lined club, etc.....	326.04
9239	Boley Bros. & Kelly Merc. Co....	Engine oil .....	16.80
9240	T. L. Blood & Co.....	Paint .....	.65
9241	The Samuel Carman Printing Co.	Job printing .....	19.95
9242	A. Decker & Co.....	Hardware .....	3.43
9243	D. D. Smith, agent.....	Light for office.....	7.50
9244	The Crane-Ordway Co.....	Pipe and fittings.....	60.38
9245	Farwell, Ozmun, Kirk & Co.....	Powder, lanterns, etc.....	13.48
9246	Gruetier & Co.....	Brick .....	134.60
9247	Fairbanks, Morse & Co.....	Iron sleeve for reservoir weir..	1.62
9248	Union Brass & Metal Mfg. Co.....	Brass goods .....	27.75
9249	Thos. Brennan Lumber Co.....	Lumber .....	10.14
9250	Boeringer & Son.....	Frame for weir diagram.....	1.65
9251	Bohn Mfg. Co.....	Sash .....	1.55

## LIST OF VOUCHERS—Continued.

DECEMBER, 1897—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
9252	E. G. Smith.....	Analysis of water.....	\$68.50
9253	Pioneer Press Co.....	Blank books.....	28.75
9254	St. Paul Fire & Marine Ins. Co..	Insurance—Office building.....	20.30
9255	Chas. Friend & Son.....	Fur robe.....	11.00
9256	W. H. Brögger.....	Cleaning flues.....	4.00
9257	H. W. Phillips, Asst. Corp. Atty.	Expenses in lawsuits.....	13.50
9258	Flelding & Shepley.....	Relaying pavement.....	174.41
9259	Pittsburgh Meter Co.....	Est. No. 6—Meters.....	480.00
9260	Martin Feist.....	Lunch for men cleaning conduit	3.50
9261	Dearborn Drug & Chem. Works..	Oil.....	21.00
9262	Jno. Caulfield, Secretary.....	Cash advanced.....	76.00
9263	Jno. Keany.....	Est. No. 2 and final—Smoke	
9264	Gronier & Co.....	stack.....	23.00
9265	Schubner-Libby Co.....	Brick.....	53.84
9266	R. B. C. Bement.....	Roof for storage shed.....	89.10
9267	John Caulfield.....	Balance on salary.....	283.39
9268	Fairbanks, Morse & Co.....	Balance on salary.....	708.39
		Est. No. 5 and final, laying pipe	273.12
	Total .....		\$8,705.50
	Grand total .....		\$290,381.51

## SUPERINTENDENT'S REPORT.

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ST. PAUL, MINN., Jan. 1, 1898.

*To the Board of Water Commissioners,*

GENTLEMEN: I herewith submit my annual report, being for work done by and under your direction for the year 1897.

The accompanying tables will show in detail the character of work done, a summary of which is as follows:

### EXTENSION ACCOUNT FOR 1897.

Water pipe laid on high service.....	8,135.9 feet
Water pipe laid on high service, west side.....	108.0 feet
Water pipe laid on low service.....	2,806.5 feet
Total .....	11,050.4 feet
Or 2.0928 miles on new mains.	
Water pipe relaid.....	5,854.0 feet
Making a total of 3.2015 miles, or.....	16,904.4 feet
The number of fire hydrants placed during the year.....	17
The number of valves placed during the year.....	35
Service pipe connections put in during the year.....	430
New meters placed during the year.....	770
Street springing hydrants placed during the year.....	9

Vadnais lake weir, built for the purpose of measuring the water pumped from artesian wells.

Vadnais lake wells, being two additional wells that were put down the latter part of the year 1896, but were not connected up with the other system of wells until this year; making a total of nine wells that can be put in service when required.

High service reservoir weir built for the purpose of measuring the water that is pumped at the McCarron lake pumping station.

Dwelling house at Centerville, built for the engineer and keeper of the pumping plant.

Fencing right of way on Centerville extension.

Venturi meter, on thirty-inch low service main, near McCarron lake pumping station.

Storage shed at 23 East Fifth street.

The item of relaying mains is mostly for extending a district, so that it can be supplied from Lake Phalen, necessitating putting in of larger



pipe on some streets and the substituting of cast iron pipe in place of cement pipe. All cast-iron pipe taken up was used on other streets as required. For some time past Lake Phalen has been supplying that territory lying east of Broadway (on low service), and the changes made so far extend the district so as to include everything north of Seventh street, east of Jackson street and south of Grove street, and if desired can be extended west as far as Cedar street, thereby adding about fifty (50) acres to be supplied, and in which district there are already about 240 consumers. By arrangement of the gates, the supply can be taken either from Vadnais or Lake Phalen, as the condition of the source of supply may require.

#### FIRE HYDRANTS.

There were seventeen (17) fire hydrants placed during the year, making a total of twenty-two hundred and forty-nine (2,249) that are now in service.

#### REPAIRS ON FIRE HYDRANTS.

The nature and cause of repairs is as follows: Valves cut, twenty-three (23); defective seat washers, six (6); valve nuts loose, two (2); valve rods broken, three (3); casings broken, two (2); top caps broken, two (2); hydrant moved to curb line, one (1); repacked stuffing boxes, one hundred and ninety-five (195); hydrant casings screwed down, one hundred eighty-seven (187); stuffing boxes broken, eight (8); top bolts lost, six (6); stand pipes split, two (2); brass nuts on stuffing boxes broken, two (2). During the year ice was discovered in fifteen (15) hydrants. In some instances the hydrant required attention four different times, and as a general thing was caused by ground water rising in the casing and on streets that were not sewered.

The average cost per hydrant for maintenance (for labor only) was forty-seven (47) cents, which I consider the minimum figure for the proper inspection and repair, the work having been done by a force of four men and one team, or about 550 hydrants per man, to take care of.

#### STREET SPRINKLING STAND PIPES.

There have been nine (9) new street sprinkling stand pipes placed, and one removed, making a total of two hundred and ninety-one (291) now placed and ready for service. The repairs on the same were as follows: Hose repaired on arm of stand pipe seventy-nine (79); repaired top valves eighteen (18), and new top valves fifteen (15). Leaks on valve rods nineteen (19).

During the year there was placed on two of the regular fire hydrants a street sprinkling crane or attachment, which has a side valve on the stand pipe which has to be closed before a hose can be attached (in case the hydrant is required for fire purposes). These stand pipes should only be placed at such points where temporary service is required, and where the hydrant is located back from the line of cross street, as most all fire

hydrants are located at curb and street line intersections. I think it would not be advisable to have them generally used, except as above mentioned.

The standard wrench lifts the valve on stand pipe, and the attachment should be removed early in the fall.

The average cost per piece for the maintenance of all street sprinkling hydrants for the year (for labor only) was \$1.65.

#### REPAIRS ON MAINS.

There have been eleven (11) leaks on mains during the year, the causes of which were as follows: Defective lead joint, six (6); split pipe, one (1); street settlement on force main, one (1); jarring of pipe at railroad crossing, two (2); plug blown out, one (1).

During the years 1896 and 1897 it has been necessary to repair the twelve-inch main at the crossing of Rice street and the Great Northern Railway at four different times, incurring an expense of about fifty (50) dollars, and by prompt attention no serious results have occurred. The character of the soil is of such a yielding nature that the pipe is constantly being disturbed by the jarring of the ground by passing trains, causing the joints to be drawn apart; therefore, to avoid any serious accident that is likely to occur in the future, I would recommend that the pipe be properly supported by piling as soon as practicable.

#### NEW VALVES PLACED AND VALVES REPAIRED.

There have been thirty-five (35) new valves placed during the year, making a total of 2,094 now in service.

Repairs on valves were as follows:

Valves repacked, thirty (30); new washers, two (2); broken spreader, one (1); rust in pinion wheel, five (5).

#### FIRE EXTINGUISHERS.

There were six (6) four-inch connections put in this year for automatic fire extinguishers. The number and size of the pipe leading from the main are as follows:

One branch with twelve-inch pipe—Wood Harvester Works.

Three branches with six-inch pipe.

Twenty-four branches with four-inch pipe.

Making a total of twenty-eight (28) fire extinguishers put in up to date.

#### SERVICE PIPES.

There have been four hundred and thirty (430) service pipes put in this year, ninety-eight (98) of which were put on low service and three hundred and thirty-two (332) on high service, making a total number of services in the city up to date of fifteen thousand two hundred and twelve (15,212).

There have been seventy-seven (77) leaks repaired, the causes of which were as follows:

Defective joints, twelve (12); defective stops, eighteen (18); defective pipes, thirty-nine (39); pipes frozen, eight (8).

Old cement boxes replaced with standard box..... 14

Top pieces replaced by reason of being broken..... 38



Middle pieces replaced.....	9
Bolts replaced .....	166
New covers placed.....	28

I desire to call your attention to the cost of house services put in this year.

There have been four hundred and thirty (430) connections put in, four hundred and eleven of which were in earth excavation and nineteen in rock excavation. The lead pipe, corporation tap, stop boxes, etc., being in the nature of a fixed charge according as the services are long or short, I have been able to determine the following results as to the actual cost to the department per service in the rock formation, which amount includes labor, materials, repairs, tools, etc.

There was received the sum of \$758.60 for the nineteen (19) services put in the rock formation, some of which were classified as being all rock excavation, and some partly in rock and earth, the actual cost of which which was \$795.54, showing a loss of \$36.94.

There was received for the 411 services in earth excavations the sum of \$7,645.83, and deducting the cost of labor, material, inspection, would make a total of \$8,216.58, which leaves a shortage of \$470.75, as a loss to the connection account. The average cost per service in rock excavation (long) equals \$51.66. The average cost per service in rock excavation (short) equals \$30.66.

The above figures represent what the cost is per service on unpaved streets, and the cost of replacing the pavement depending of course on the kind of pavement disturbed, which cost should be added to the above figures.

#### METER DEPARTMENT.

The meter inspector reports that the department has 2,300 registered meters. From this amount should be deducted 110, for those meters that are out of service, leaving a balance of 2,190 that are a source of revenue. Taking the above figures together with an accurate account of the cost of labor and material for setting, and general maintenance for the year 1897, it appears that it will take about ten years for the department to be repaid for the original cost of meters, together with their general maintenance.

There being about seventy-five per cent (75%) of the total number of meters set of one-half-inch and five-eighths-inch size, I have taken these sizes as a basis to determine the above result. The total cost of a five-eighths-inch meter in place ready for service is..... \$10.19

And in addition to the original cost of meter in place there is the following charge for maintenance, etc., and interest on capital invested:

Interest on \$10.19@4½% for 10 years.....	\$4.58
Cost of maintenance for 10 years @ 32 cents per annum.....	3.20
	<hr/> 7.78
	<hr/> \$17.97
By revenue for rent of meter at the present rates @ 15 cents per month and for 10 years.....	\$18.00

## HIGH SERVICE RESERVOIR.

During the month of June the water was drawn off, and the reservoir cleaned, and such parts of the bottom and sides as required attention were replastered with cement. The time required to do this work and refill the reservoir was about nine (9) days. The cost of cleaning (for labor only) was \$169.15.

I urgently recommend that a permanent iron fence be placed around the reservoir, as it will be the means of keeping out a great deal of objectionable matter that gets in there now, and it would also be a guard against accident to persons or children, who during the summer are daily visitors.

## FOUNTAINS FOR PUBLIC PARKS AND DRINKING PURPOSES.

There are twenty (20) fountains in use in public parks, twenty-eight (28) fountains are used for watering animals, and five (5) for drinking purposes, making a total of fifty-three (53) service taps on mains that are constantly in use during the summer months. The placing of an automatic valve to regulate the flow on those fountains used for watering animals should be done as soon as practicable, as fully seventy-five per cent of the water that is let run is absolute waste.

## VADNAIS LAKE CONDUIT.

The brick conduit from Vadnais lake to the terminal chamber at the McCarron lake pumping station has been flushed twice during the year at an expense (for labor only) of \$67.78. In both instances the conduit was found to have been free from all vegetable growths, and in every other respect in good condition. I wish to call your attention to that part of the conduit on the west side of Sandy lake. By reason of a gradual and uniform settlement of the whole line in this vicinity the water line of conduit is from twelve to fourteen inches below the original grade; consequently there is the latter depth of water and sediment that is only partially moved in flushing, which is objectionable for several reasons, and I recommend that it be remedied by putting in a blow-off, which can be done at an expense of about twelve hundred (1,200) dollars.

## CENTERVILLE EXTENSION ACCOUNT.

## CENTERVILLE LAKE INTAKE PIPE.

In my last year's report I referred only to the work as being partially finished, and as it was completed this year I respectfully report as follows, as to the nature, difficulties and cost of the work: The work consisted of the laying of a thirty-six-inch cast-iron pipe into Centerville lake for a distance of 814 feet, to be used as a suction pipe for the fifteen million-gallon pump. For the first two hundred feet from the shore end no difficulty was encountered, as hard clay was found at grade line of pipe. But for the balance of the distance a very treacherous formation was met with,



which necessitated sheeting the ditch with three-inch matched lumber, fourteen to twenty-two feet long, and notwithstanding unusual care was taken in driving it, under runs frequently took place, resulting in the work being flooded, and causing considerable delay and expense which could neither be avoided nor anticipated. This work was done by day labor for \$3,992.07, or about \$4.90 per lineal foot, which price is for excavating, laying the pipe, and all piling, timber and other material used in permanent work, this amount being \$520 less than if the work had been done by contract.

#### CENTERVILLE WELLS.

The earth embankment around fifteen of the wells was washed away during the spring high water, and the boxes should be protected by piling; and I recommend that this work be done at once, as it can be done during the months of February and March at a less cost than at any other time.

#### CENTERVILLE RIGHT OF WAY FENCE.

During the year a contract was let to fence both sides of the right of way fence from the Centerville road near the junction chamber to and around the pump house grounds and Centerville lake, requiring 25,786 lineal feet of fencing, this work, including all the necessary gates, etc., cost \$703.71, or \$0.0272 per lineal foot of fence complete.

#### RIGHT OF WAY.

The amount expended during the year on repairs of right of way has been small. Total expended was as follows:

Canals and ditches.....	\$206.80
Repairs on fence.....	76.08
Culverts and drains.....	201.48
Repairs on roads and bridges.....	23.28
Total .....	\$507.64

I wish to call your attention to the advisability of the board taking such legal steps as will compel all individuals and corporations to recognize the rights of the Water Board, by requiring them to pay a nominal annual rent wherever they occupy the right of way, or other lands belonging to the board, as uninterrupted possession for the period allowed by law might operate in the future as a bar to absolute ownership. The question of adverse possession, as between an individual and the public, where land has been properly dedicated for public use, has, as a general thing, been decided in favor of the public, notwithstanding adverse occupancy for the period required by law had taken place. But it appears to me that, after looking over the deeds, etc., for some of this property, that the position of the Water Board in some instances is entirely different, as some parts of the Lake Phalen right of way was acquired by purchase, condemnation and easements, all of which was done by a corporation, and

subsequently transferred to the Water Board by direct purchase. And in this transfer I presume it could only convey such title as it had acquired under its corporate power. And where parties have encroached on the right of way and had uninterrupted possession prior and since the purchase by the board, the question might arise in the near future that would cause considerable expense and litigation. I therefore recommend that the board take such action in this matter as in their judgment may seem proper.

#### SIDE-TRACK FOR THE McCARRON LAKE PUMPING STATION.

For the past eight years, being from 1890 to 1897 inclusive, the plant has used about 9,000 tons of coal, for which the department pays about twenty-five (25) cents per ton for hauling, which is included in the price bid for delivery. The question of having a sidetrack put in from the Soo Railroad is of sufficient importance to call your attention to the matter, and I respectfully report as follows: Commencing at a point about 450 feet north of the plant, thence to a point opposite in the rear of the pump house, and by arranging a turn-table at the proper place, four cars can be set, two of which can be unloaded at a time. The accompanying plan represents the manner in which I would suggest the track be placed, the estimated cost of which would be about \$2,500, excepting the cost of ties, metal and labor in laying track.

#### LAKE PHALEN.

The wooden construction at the outlet of the lake, which has served the purpose of a dam to hold the water at a certain elevation has become decayed, and in its place should be built a permanent dam and gate-house. I therefore recommend that this be done sometime during the year.

#### STORAGE SHED AT 23 EAST FIFTH STREET.

The shed was built for the purpose of having the upper story used for the storage of pipes, light specials, etc., and the lower portion to be used as a carriage shed; the total cost of which was \$558.40. There was also built two brick vaults, one of which was for the storage of oils, etc., and the other for the refuse from the stable, the cost of which was \$110.93.

The city engineer, in his report of 1896, recommends the building of a permanent gate-house at the outlet of Pleasant lake. This improvement ought to be done this year, and in connection with the work I think it advisable to straighten the outlet creek, and instead of using a wooden construction to carry the water, I would suggest that brick be used in its place.

The difference in first cost as between wood and brick would be about \$2,500, and considering the many advantages that brick has over wood for this particular location and the purpose for which it is to be used certainly would warrant the expending of the difference in first cost.

Vadnais lake weir and artesian wells, high service reservoir weir, and the Venturi meter have been completed during the year, all of which work was done by day labor by this department, according to plans and specifications furnished by the city engineer, whose report to the board will show the cost of said work. Therefore I omit all detail matter in relation thereto.

#### SUMMARY OF RECOMMENDATIONS.

Gate-house at outlet of Lake Phalen.  
Gate-house at outlet of Pleasant lake.  
Blow-off on Vadnais lake conduit at Sandy lake.  
Iron fence around high service reservoir.  
Piling to protect well boxes from ice at Centerville.  
Piling to support twelve-inch main at crossing of Rice street and Great Northern Railroad Company tracks.  
Side track for unloading coal at McCarron lake station.  
Place automatic valves on services supplying fountains with water.  
In conclusion, I desire to express my thanks for the courtesy and assistance tendered me in the performance of my duty by your honorable board.

Respectfully submitted,

A. R. STARKEY,  
Superintendent.



## PIPE LAID ON HIGH SERVICE DURING THE YEAR 1897.

Date.	Street.	From Street to Street.	4 Inch.	6 Inch.	12 Inch.	36 Inch.
July 23....	Lombard ave	Milton, 454 feet westerly....	.....	454	.....	.....
July 23....	Milton.....	Victoria to Lombard.....	.....	335.5	.....	.....
July 24....	Greenb'r ave.	Sims to Case.....	.....	332	.....	.....
July 26....	Wells, n. s. .	Walsh ave. to a point 286 feet easterly .....	.....	286	.....	.....
July 28....	Cook.....	Courtland to Agate.....	.....	548	.....	.....
Aug. 13....	Van Buren..	Simpson to Asbury.....	.....	434	.....	.....
Aug. 13....	Asbury ave..	Van Buren to Blair.....	.....	307	.....	.....
Aug. 7....	Ellis.....	Hampden to Seal.....	.....	941	.....	.....
Aug. 7....	Hampden ave	Intersection with Ellis.....	.....	42	.....	.....
Aug. 10....	Sidney ave..	Present terminus to Ellis.....	.....	500.5	.....	.....
Sept. 1....	Force main..	At High Service Reservoir.....	.....	.....	.....	33
Sept. 22....	Conway.....	Cypress to Earl.....	.....	660	.....	.....
Sept. 25....	Lawson.....	Jessie to Burr.....	.....	661	.....	.....
Sept. 29....	Park ave....	Winnipeg to Manitoba.....	.....	323	.....	.....
Oct. 1....	Victoria....	Front to Hatch.....	.....	.....	375	.....
Oct. 4....	Virginia ave.	Fuller to Aurora.....	326	.....	.....	.....
Oct. 22....	Vandalla....	University ave. to a point 328 feet n of Charles.....	.....	761.3	.....	.....
Oct. 22....	Charles.....	Intersection with Vandalla..	.....	64.3	.....	.....
Oct. 28....	Cook.....	Agate—296 feet easterly.....	.....	296	.....	.....
Dec. 4....	Fuller.....	Present terminus to Lexing- ton ave.....	.....	456.3	.....	.....
Total.....			326	7401.9	375	33

Total 4-inch pipe.....	326
Total 6-inch pipe.....	7,401.9
Total 12-inch pipe.....	375
Total 36-inch pipe.....	33

Total on high service..... 8,135.9 feet, or 1.5400 miles.

## PIPE LAID ON LOW SERVICE DURING THE YEAR 1897.

Date.	Street.	From Street to Street.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.
June 14....	Cliff.....	Goodhue to Smith ave.....	.....	250.5	.....	.....	.....
June 14....	Smith ave...	Cliff to McBoal.....	.....	840	.....	.....	.....
June 14....	Banfil.....	Intersection with Smith ave	22	.....	.....	.....	.....
July 12....	Winifred....	Present term. to a point 147 feet west of Bellows.....	.....	47	.....	.....	.....
July 15....	James.....	W. Seventh to Webster.....	.....	494.5	.....	.....	.....
July 17....	Beaumont...	Present term. to intersection with Payne ave.....	.....	60	.....	.....	.....
July 17....	Payne ave...	Present term. to intersection with Beaumont.....	.....	70	.....	.....	.....
Aug. 19....	Kittson's add	Alley, block 4, Broadway to Pine.....	.....	.....	.....	222	.....
Aug. 19....	Pine.....	Tenth to alley, block 4, Kitt- son's add.....	.....	.....	.....	132	.....
Oct. 8....	Tenth.....	Intersection with Broadway..	.....	.....	.....	119	.....
Oct. 8....	Tenth.....	Locust to Grova.....	.....	.....	.....	.....	139
Oct. 12....	Eighth.....	Intersection with Broadway..	.....	.....	55	.....	.....
Nov. 24....	.....	Whitney & Smith's add., al- ley, block 15.....	.....	355.5	.....	.....	.....
Total.....			22	2,117.5	55	473	139

Total 4-inch pipe.....	22 feet
Total 6-inch pipe.....	2,117.5 feet
Total 8-inch pipe.....	55 feet
Total 12-inch pipe.....	473 feet
Total 16-inch pipe.....	139 feet

Total on low service..... 2,806.5 feet, or 0.5315 miles.



## PIPE LAID ON WEST SIDE HIGH SERVICE DURING THE YEAR 1897.

Date.	Street.	From Street to Street.	6 Inch.
May 28....	Cherokee ave.	At intersection with Smith ave.....	108

Total 6-inch pipe..... 108 feet

## PIPE RELAI'D ON LOW SERVICE DURING THE YEAR 1897.

Date.	Street.	From-To.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	at Inch.
Oct. 16	Broadway...	At intersection with Eighth, 24-inch replaced with.....							8
Oct. 16	Broadway...	At intersection with Tenth, 6-inch cement pipe relaid with..		20					
Oct. 16	Broadway...	At intersection with Tenth, 24-inch replaced with.....							11
Sept. 23	Lafayette ave	Grove—50 feet northerly, 16-inch cement pipe relaid with.....				50			
Oct. 5	Locust.....	Seventh to Eighth, 16-inch cement pipe relaid with.....				65			
Oct. 5	Locust.....	Seventh to Eighth, 16-inch cement pipe relaid with.....					21		
Oct. 5	Locust.....	Ninth to Tenth, 16-inch cement pipe relaid with.....				70			
Oct. 5	Locust.....	Ninth to Tenth, 16-inch cement pipe relaid with.....					11		3
April 26	Eighth .....	At intersection with Wacouta, 4-inch relaid with.....		84					
Oct. 9	Eighth.....	Minnesota to Locust, 4-inch relaid with.....			3,182				
Oct. 9	Eighth.....	At intersection with Minnesota, 4-inch replaced with.....	4						
Oct. 9	Eighth.....	At intersection with Locust, 4-inch replaced with.....	7						
Sept. 25	Tenth.....	Pine to Locust, 6-inch relaid with.....				840			
Aug. 28	Tenth.....	Jackson to Broadway, 4-inch relaid with.....				1,324			
Aug. 21	Tenth.....	At intersection with Pine, 6-inch replaced with.....		8					
Sept. 4	Minnesota...	At intersection with Eighth, 4-inch replaced with.....	4						
Sept. 4	Robert.....	At intersection with Eighth, 6-inch replaced with.....		9					
Sept. 4	Jackson.....	At intersection with Eighth, 12-inch replaced with.....				10			
Aug. 28	Temperance..	At intersection with Tenth, 4-inch replaced with.....	14						
Sept. 4	Temperance..	At intersection with Eighth, 4-inch replaced with.....	6						
Aug. 28	Sibley.....	At intersection with Tenth, 4-inch relaid with.....		8					
Sept. 11	Sibley.....	At intersection with Eighth, 4-inch relaid with.....		4					
Aug. 21	Canada.....	At intersection with Tenth, 6-inch cement pipe relaid with..		8					
Aug. 21	Pine.....	At intersection with Tenth, 4-inch replaced with.....	4						

## PIPE RELAID ON LOW SERVICE DURING THE YEAR 1897.—Continued.

Date.	Street.	From—To.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.
Sept. 18	Pine.....	At intersection with Eighth, 4-inch relaid with.....	14						
Aug. 21	John.....	At intersection with Tenth, 4-inch replaced with.....	8						
Sept. 18	John.....	At intersection with Eighth, 4-inch relaid with.....	6						
Sept. 23	Grove.....	At intersection with Tenth, 6-inch replaced with.....	30						
Aug. 28	Wacouta....	At intersection with Tenth, 4-inch replaced with.....	4						
Total .....			51	107	3,266	2,180	185	40	25

Total relaid, 5854 feet.

6-inch cement pipe relaid with.....	28								
16-inch cement pipe relaid with.....							185		
16-inch cement pipe relaid with.....								40	
4-inch iron pipe replaced with.....	51								
4-inch iron pipe relaid with.....	32								
4-inch iron pipe relaid with.....		3,266							
4-inch iron pipe relaid with.....			1,324						
6-inch iron pipe replaced with.....	47								
6-inch iron pipe relaid with.....			846						
12-inch iron pipe replaced with.....			10						
24-inch iron pipe replaced with.....									25
Total .....	51	107	3,266	2,180	185	40	25		

Abandoned or taken out on low service during the year 1897.

Locust, from Tenth to Grove, 110 feet 16-inch cement pipe abandoned.

Tenth, at intersection with Locust, 22 feet 6-inch pipe abandoned.

Goodrich avenue, east of Leech, 6 feet 6-inch pipe taken out.

Wilkin, south of McBoal, 6 feet 6-inch pipe taken out.

## SUMMARY OF WATER PIPE LAID IN THE CITY OF ST. PAUL JAN. 1, 1898

SYSTEM.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.	Total Feet.	Total Miles.
High Service..	37,749	549,890.9		120,874	87,188	36,224	15,495	9,234	8,946	865,590.9	163.9377
Low Service...	36,580	197,739.5	6,732	50,640	38,067	8,342	8,765	16,436	18	363,628.5	68.8122
W.S. High Service		23,138		7,219	3,950					34,307	6.4975
Total.....	74,328	770,758.4	6,732	178,733	129,205	44,566	24,260	25,670	8,964	1,263,226.4	239.2489

Total 4-inch pipe.....	74,328
Total 6-inch pipe.....	770,758.4
Total 8-inch pipe.....	6,732
Total 12-inch pipe.....	178,733
Total 16-inch pipe.....	129,205
Total 20-inch pipe.....	44,566
Total 24-inch pipe.....	24,260
Total 30-inch pipe.....	25,670
Total 36-inch pipe.....	8,964

Grand total ..... 1,263,226.4 feet, or 239.2489 miles.

## HYDRANTS PLACED IN 1896 AND 1897.

No.	LOCATION.	Service.	Double or Single Steamer.	Size of Pipe.	Pressure in ft.
2201	Wabasha, bet. Fifth and Sixth, w. side	Low.....	Double.....	8	3
2202	Sixth, bet. Wabasha and St. Peter, s. side	Low.....	Double.....	8	38
2203	Fifth and Market, 5, e. cor.....	Low.....	Double.....	8	38
2204	Cedar and Second, 22, w. cor.....	Low.....	Double.....	8	38
2205	W. Third, 65 ft. s. of Summit, e. side.	High.....	Single.....	6	58
2206	Oakland and Floral, n. w. cor.....	High.....	Single.....	4	67
2207	Summit, 325 ft. e. of Sixth, n. side.	High.....	Double.....	12	61
2208	Sixth and Summit, s. e. cor.....	High.....	Double.....	6	61
2209	Duke and Grace, n. w. cor.....	Low.....	Single.....	6	37
2210	Duke and St. Clair, s. w. cor.....	Low.....	Single.....	6	34
2211	Robie and Bellows, n. e. cor., West Side	High.....	Single.....	6	93
2212	Robie and Bidwell, n. w. cor., West Side	High.....	Single.....	6	95
2213	Louisa and Hall, s. w. cor., West Side	High.....	Single.....	6	86
2214	Sims and Cypress, n. e. cor.....	High.....	Single.....	6	54
2215	Arcade, 154.5 ft. s. of Wells, e. side.	High.....	Double.....	12	63
2216	Forest, 180 ft. s. of Wells, e. side.	High.....	Double.....	6	62
2217	Geranium and Bradley, n. e. cor.....	High.....	Single.....	6	43
2218	Geranium and Burr, n. e. cor.....	High.....	Single.....	6	53
2219	Westminster and Cayuga, n. w. cor.....	High.....	Single.....	6	83
2220	Westminster and York, s. w. cor.....	High.....	Single.....	6	77
2221	Agate and Case, n. w. cor.....	High.....	Single.....	6	86
2222	Bohn's factory, 215 ft. e. of Arcade, 357 ft. s. of Wells.	Low.....	Double.....	16	10
2223	Bohn's factory, 208 ft. e. of Arcade, 390 ft. s. of Wells.	Low.....	Double.....	16	10
2224	Bohn's factory, 50 ft. w. of Mendota, 320 ft. s. of Wells.	Low.....	Double.....	16	10
2225	Marshall and Fry, n. w. cor.....	High.....	Single.....	12	34
2226	Marshall and Pierce, n. w. cor.....	High.....	Single.....	12	35
2227	Marshall and Aldin, n. w. cor.....	High.....	Single.....	12	36
2228	Marshall and Herschel, n. w. cor.....	High.....	Single.....	12	35
2229	Grand and Fairview, n. e. cor.....	High.....	Single.....	6	42
2230	Jessamine and Cypress, n. w. cor.....	High.....	Single.....	6	36
2231	Lawson and Agate, n. w. cor.....	High.....	Single.....	6	80
2232	Onelda and Grace, s. w. cor.....	Low.....	Single.....	6	34
2233	Smith ave. and McBoal, s. w. cor.....	Low.....	Single.....	6	37
2234	Cook and Agate, n. w. cor.....	High.....	Single.....	6	75
2235	Wells and Walsh, n. e. cor.....	High.....	Single.....	6	56
2236	Ellis and Sidney, n. e. cor.....	High.....	Single.....	6	40
2237	Lombard ave., 436 ft. w. of Milton.	High.....	Single.....	6	51
2238	Lombard ave. and Milton, n. w. cor.....	High.....	Single.....	6	59
2239	James and Webster, n. w. cor.....	Low.....	Single.....	6	38
2240	Mackubin, 20 ft. n. of alley, bet. Portland and Summit aves.	High.....	Single.....	6	34
2241	Asbury ave. and Blair, n. w. cor.....	High.....	Single.....	6	41
2242	Conway and Earl, n. w. cor.....	High.....	Single.....	6	48
2243	Lawson and Bradley, n. w. cor.....	High.....	Single.....	6	68
2244	Cook, 300 ft. e. of Agate.	High.....	Single.....	6	82
2245	Victoria and Hatch, s. w. cor.....	High.....	Single.....	12	35
2246	Vandalla and Charles, n. e. cor.....	High.....	Single.....	6	45
2247	Vandalla, 328 ft. n. of Charles.	High.....	Single.....	6	44
2248	Goodrich ave., 167 ft. e. of Leech.	Low.....	Single.....	6	45
2249	Fuller and Lexington, n. w. cor.....	High.....	Single.....	6	51

New hydrants placed during the year 1897 on high service..... 14

New hydrants placed during the year 1897 on low service..... 3

Total for the year..... 17

DISTRICT.	Double Steamer.	Single Steamer.	Total Num of Hydrant Each Distr.
High service .....	11	1,375	1
Low service .....	130	642	
West Side high service.....		91	
Total .....	141	2,108	2

The number and location of the following hydrants are placed on private property. They are of the standard make and can be used in case of fire. Northwestern Cordage Works, 4; W. A. Wood Harvester Works, 11; North Pacific Shops, 3; Yoerg's Brewery, 1.

## STREET SPRINKLING HYDRANTS PLACED IN 1897.

No.	LOCATION.	Measurement of Valve from Hydrant.
284	Cherokee and Smith .....	28 $\frac{1}{2}$ feet
285	Cherokee and Stevens .....	8 feet
286	Cherokee and Page .....	8 feet
287	Cherokee and Winona .....	31 feet
288	Mt. Airy and Linden .....	7 $\frac{1}{2}$ feet
289	Minnehaha and De Soto .....	6 $\frac{1}{2}$ feet
290	Winifred and Andrew .....	8 feet
291	Stryker and Isabel .....	8 feet
No. 40 has been removed and a new sprinkling hydrant put up at Gaultier, 110 feet north of Lafond .....		10 feet
No. 87 has been changed to Valley and Canada .....		7 $\frac{1}{2}$ feet
No. 159 has been moved nearer curb line .....		18 $\frac{1}{2}$ feet
No. 174 has been moved nearer curb line .....		3 feet
No. 192 has been moved from west side of Snelling and center of Summit avenue to southeast corner of that street intersection.		4 feet
No. 229 has been moved from center of Summit avenue and east side Griggs to southwest corner of that street intersection .....		120 feet
Number placed this year .....		9
Number removed this year .....		1
Total placed to date .....		291



## VALVES PLACED IN 1897.

STREET.	LOCATION.	4-Inch.	6 Inch.	8-Inch.	12-Inch.	16-Inch.	24-Inch.
Asbury ave.....	South line of Van Buren.....	1					
Conway.....	West line of Cypress.....	1					
Cook.....	East line of Courtland ave.....	1					
Ellis.....	West line of Hampden ave.....	1					
Fuller.....	East line of Lexington ave.....	1					
Greenbrier ave.....	North line of Sims.....	1					
Lawson.....	West line of Bradley.....	1					
Lombard ave.....	West line of Milton.....	1					
Park ave.....	North line of Winnipeg.....	1					
Sidney ave.....	North line of Ellis.....	1					
Van Buren.....	West line of Simpson ave.....	1					
Vandalia.....	North line of University ave.....	1					
Vandalia.....	North line of Charles.....	1					
Victoria.....	North line of Front.....				1		
Virginia.....	North line of Fuller.....	1					
Banfil.....	West line of Smith ave.....	1					
Beaumont.....	46 feet w. of w. line of Payne ave.....	1					
Broadway.....	9 feet s. of n. line of Tenth M. H.....						1
Cliff.....	28.5 feet e. of Goodhue, n. l. produced.....	1					
Eighth.....	East line of Robert.....			1			
Eighth.....	East line of Wacouta.....	1					
Eighth.....	31 feet w. of e. l. Broadway; reserve.....			1			
Eighth.....	22 feet e. of w. l. Broadway; reserve.....			1			
Eighth.....	1 foot e. of w. l. Olive.....			1			
Kittson's addition	Alley blk. 4, e. l. of Broadway.....				1		
Locust.....	South line of Tenth.....					1	
Payne ave.....	12 feet n. of n. l. Beaumont B. O.....	1					
Smith ave.....	North line of Goodrich ave.....	1					
Tenth.....	West line of Sibley.....				1		
Tenth.....	31 feet w. of e. l. Broadway; reserve.....				1		
Tenth.....	20 feet e. of w. l. Broadway; reserve.....				1		
Tenth.....	West line of Olive.....				1		
Wacouta.....	3 feet n. of s. line of Eighth.....				1		
Whitney & Smith's add.....	Alley, blk. 15; 20 ft w. of e. l. Wacouta.....	1					
Wilkin.....	South of McBoal at edge of bluff B. O.....	1					
Total .....		3	18	5	7	1	1

Total high service..... 20

Total low service..... 15

Total ..... 35

8 4-inch valves have been replaced with 8-inch.  
 4 4-inch valves have been replaced with 12-inch.

## TOTAL NUMBER OF VALVES ON ALL SYSTEMS JAN. 1, 1898.

SIZES IN INCHES.	High Service.	Low Service.	West Side High Service.	Total.
3 inches .....	23	15		38
4 inches .....	111	118		229
6 inches .....	914	447	38	1,399
8 inches .....	2	26		28
12 inches .....	137	76	8	221
16 inches .....	66	36	5	107
20 inches .....	33	10		43
24 inches .....	9	5		14
30 inches .....	4	5		9
36 inches .....	5	1		6
Total .....	1,304	739	51	2,094

ION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID  
ON LOW SERVICE TO JAN. 1, 1898.

FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Crossing State .....		55							
Drake to Chatsworth .....		3865							
Jefferson to Grace .....		505							
Seventh to Drake .....		745							
Robie to Winifred .....	334								
Concord—25 feet east .....	25								
Smith ave. to Duke .....	2302								
Stewart to Randolph .....		607							
Lafayette to De Soto .....		1944							
North to Minnehaha .....		481							
Andrew to Concord .....		1327							
100 feet south of Grove to Minnehaha .....		1647							
Winifred—25 feet north .....	498	1503							
Mississippi river to University East of Lafayette .....	498	25							
Concord to Congress .....		1881							
Isabel to Congress .....		1735			1938		1741		
Collins to Fauquier .....		47							
Partridge to North .....		935							
Ninth to University .....		302							
Summit to Second .....		1685							
Seventh to Washington .....		788							
Jefferson to Superior .....		2055							
Cedar to Smith ave. ....		289	176	2573		614			
Lafayette to Bedford .....		1235							
		1763							
		1670							
		1016							
Broadway to State .....					1089				
Isabel to Belvidere .....				6869					
350 feet east of Bancroft to Charlton .....	392	6425							
Wabasha to S. Robert .....		741							
R. R. to Parnell .....		1240							
Congress to Winifred .....		403							
Glencoe to Pennsylvania .....		745							
Goodhue to Smith ave. ....		250.5							
Bedford to Beaumont .....		710							
Hopkins to Fauquier .....		453		1540					
Seventh to Ramsey .....		1144							
Cascade to St. Clair .....		1893							
Von Minden to Goodhue .....		576							
Greenwood to Bellows .....		2911							
James to Jefferson .....		1050							
Robert to Gorman .....		705							
Spring to Seventh .....		1449							
Wabasha—110 ft. east of Neill Cedar to Broadway .....	1425		3321						
Exchange to C. M. & St. P. R. R. ....	406								
Wabasha to Wilkin .....	3062	323							
At Indiana and Fairfield crossing .....		51			100				
Minnehaha to Reaney .....		328							
St. Clair to Cascade .....		1807							
Western to Short Line .....	373								
State to Wabasha .....		2812							
Payne to De Soto .....				1982					
Third to Kittson .....	1458	3120		2138					
Seventh to Tenth .....						1616			
Exchange to 762 feet east of Kittson .....		4865		2679					
Broadway to Robert .....		1368							
Elm to Ninth .....	3308								
Wabasha to State .....		2808							



## WATER MAINS ON LOW SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Forbes.....	Wilkin to Douglas.....		1274							
Fred.....	300 feet east of Burr.....	337								
Garfield.....	Ramsey to Goodrich.....		1002							
Goodhue.....	Cliff to Duke.....		2817							
Goodrich.....	Milwaukee Short Line to Rich- mond.....		1254		1763					
Grace.....	Seventh to Colborne.....		72							
Grove.....	Monroe to Jackson.....	133	1310				1544			
Glencoe.....	Mississippi to Columbia.....		592							
George.....	State to Stryker.....				2625					
Goff.....	Wabasha to Winifred.....		105							
Greenwood.....	Winifred to Congress.....		305							
Harrison.....	Douglas to Lawton.....		1971							
Hopkins.....	De Soto to Bradley.....		700							
Hall.....	George to Prospect Ter.....		2080							
Indiana.....	State to Ethel.....				2462	2242				
Isabel.....	State to Charlton.....				5055					
Jackson.....	Levee to University.....	40	1223		3179		108			
Jefferson.....	Erie to Arbor.....		63		1171					
James.....	Warsaw to Webster.....		939.5							
John.....	Third to Williams.....	889	2449							
Jessie.....	Minnehaha to Fauquier.....		634							
Juno.....	View to Chatsworth.....		2130							
Kittson.....	Fourth to Seventh.....		846							
Kittson's add.	Alley, block 4.....				222					
Kentucky.....	Crossing State.....		55							
Lafayette.....	Grove to De Soto.....				150	1915				
Lee ave.....	Seventh to Drake.....		1445							
Leech.....	Goodrich to Ramsey.....		1146							
Levee.....	Sibley to Jackson.....	340								
L'Orient.....	Thirteenth to Minnehaha.....		2209							
Livingston.....	Delos to Wood.....		580							
Lisbon.....	Douglas to Pleasant.....		973							
Logan.....	Bay to Canton.....		814							
Louisa.....	Robert to Gorman.....		701							
Locust.....						627	288			
McBoal.....	Wilkin to Douglas.....		1301							
Magnolia.....	Crossing Mississippi.....		18							
Market.....	Third to Fourth.....	250								
Minnehaha.....	Payne to Rivoli.....		1707							
Minnetota.....	Third to Twelfth.....	1484	1428							
Mississippi.....	Grove to Overton Ave.....		5165						8012	
Monroe Pl.....	Grove to Woodward.....	300								
Mt. Airy.....	Mississippi to L'Orient.....		330							
Michigan.....	Crossing Seventh.....		69							
Mayall alley.....	Seventh to Brown.....	410								
Midway.....	Oakdale to Brown.....		1847							
Nash.....	Pine to L'Orient.....		698							
Neill.....	Seventh to Eighth.....	325								
Ninth.....	Neill to Smith Ave.....	975	5187							
Norris.....	Canada to Temperance.....	761								
North.....	Bedford to De Soto.....		851							
Nugent.....	St. Clair to C. M & St. P. Short Line.....		513							
Olive.....	Sixth to Olmsted.....	236	1248							
Olmsted.....	John to Pine.....		651							
Onelda.....	Grace to 36 feet south of Sev- enth.....		634							
Ontario.....	Washington to Spring.....	112								
Oakdale.....	State to Midway.....		326			359				
Overton ave.....	Mississippi to term'l chamber.....								8423.15	
Patridge.....	Bradley to De Soto.....	472								
Payne.....	Beaumont to Omaha.....		1162							
Pine.....	Seventh to Olmsted.....	1261	979		132					
Plato.....	West of South Robert.....		18							
Pleasant.....	Sixth to Goodrich.....		4884							
Prince.....	John to Broadway.....		825							
Pennsylvania.....	Mississippi to Columbia.....		661							
Preble.....	Beaumont to Minnehaha.....		471							
Prescott.....	Oakdale to Woodbury.....		1365							

## WATER MAINS ON LOW SERVICE—Continued.

ST.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
	Seventh to Pleasant.....		1352			307				
	Webster to Milton.....		757		2818					
	Seventh and Goodrich.....		90							
	Elizabeth to Central.....		8881							
	St. Paul & Duluth R. R. to Edgerton.....		905							
	Union depot grounds to Sev- enth.....		1598							
	State to Andrew.....		2341							
	Cliff to Colborne.....		985		112					
	Third to College.....		2806							
	Duluth Railroad to Tuscarora	350	1090		470	15656	1508			
	East of Robert.....		18							
	Bluff to Pleasant.....		1937							
	Kittson to Pleasant.....	1890	2044	3235						
	Levee to Norris.....	1626	1462							
	College to Cliff.....		3764							
	John to Pine.....		669							
	Sibley to Wacouta.....	393								
	Mississippi river to West Side pump house.....					7704				
ve...	Robert to Cedar.....		859							
	George to Prospect Ter.....		2196							
	Tuscarora to Bay.....		909							
ce..f.	Eighth to Thirteenth.....	1569								
	Grove to College.....	441	1255		2289	139	1390			
	Pleasant to west end of Third St. bridge.....		847		6648					
h....	Pine to Jackson.....		2075							
	Ramsey to Pleasant.....		545							
	Pine to Cedar.....	290				1274				
	Seventh to Jefferson.....		692							
	Crossing State.....		51							
	Stewart to Milton.....		2624							
g....	Broadway to Olive.....	357								
en....	Doussman to Western.....		897							
	Seventh to Palace.....		2081							
	Union Depot grounds to Spruce	783	118		1736					
	100 feet south of I. P. to Pleasant.....	2420								
	Audubon to Palace.....		1030							
on....	Chestnut to Seventh.....	1047			1236					
Pl....	Lafayette to John.....		411							
	Clay to Seventh.....		316							
ve....	Milwaukee Ry. to Pleasant.....		2550							
ter....	Waverly place to N. P. Ry.....		1022							
	Fifth to Seventh.....	550								
	Short Lane Ry. to Pleasant.....		1209							
	Andrew—147 ft. w. of Bellows.....		5587							
add...	Alley, blk. 15.....		355.5							
d....	Bradley to John.....	683								
	Goff to Summit.....		6905							
	View to Chatsworth.....		2133							
	Isabel to Prospect Ter.....		745							
	Seventh to Dousman.....	678								
line...	Fauquier to Lake Phalen.....					6060	7024			
	Total.....	30589	197739.5	6732	50640	38067	8342	8765	16436	18
inch pipe.....		36589								
inch pipe.....		197739.5								
inch pipe.....		6732								
inch pipe.....		50640								
inch pipe.....		38067								
inch pipe.....		8342								
inch pipe.....		8765								
inch pipe.....		16436								
inch pipe.....		18								

363328.5, or 68.8122 miles.



LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
HIGH SERVICE TO JAN. 1, 1898.

STREET.	FROM STREET TO STREET.	4-Inch.	6 Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Allington.....	Greenbrier to Payne.....	650							
Arundel.....	Summit to Lafond.....	2553							
Ashland.....	Western to Oxford.....		7203						
Aurora.....	Robert to Chatsworth.....		7814						
Arcade.....	Third to Rose.....		1070	5382					
Astoria.....	St. Anthony to Milwaukee.....		275						
Argyle.....	Front to Van Slyke.....	370	831						
Albemarle.....	Atwater to Front.....	1293							
Arch.....	100 feet west of Columbia to Jackson.....		1725						
Atlantic.....	Fauquier to Stillwater.....		1785						
Atwater.....	Rice to Sylvan.....		1142						
Agate.....	Cortland to Jenks.....		2437						
Avon.....	Dayton to Martin.....	1381							
Asbury.....	Van Buren to Blair.....		307						
Bates.....	Murray to Hastings.....		376	3035					
Beech.....	Seventh to Duluth.....		3738						
Blair.....	Western to Fairview.....		4610						
Broadway.....	Thirteenth to Mt. Airy.....		407		533				
Burr.....	C. St. P., M. & O. R. R. to Brainerd.....		3498						
Bradford.....	Hampden to Endicott.....		819						
Bradley.....	Maryland to 236 feet of.....		256						
Burgess.....	At Dale and at Como.....		114						
Bayless Av.....	Raymond to Langford Park.....				2935				
Bayless Pl.....	Raymond to Bayless Ave.....	902							
Burns.....	Mound to Griffith.....		2753						
Blake.....	Raymond to Langford P. P. E.....		282		186				
Beacon.....	University to Shields.....	594							
Buffalo.....	Capitol to Granite.....		631						
Canada.....	University to Valley.....		290						
Capitol.....	Mississippi to Fairview.....		6866						
Carroll.....	Rice to Cleveland.....		13202						
Cedar.....	Summit to Como.....		2486						
Central Av.....	East line of Central Park to Rice.....	557	1254						
Central P D E. & W.....	Summit to Central Ave.....	1200							
Charles.....	Rice to Vandalia.....		10235.3						
Capitol Boul.....	University to Como.....		1078						
Cable.....	Seventh to Margaret.....			650					
Cook.....	Forest to Rice.....		6067						
Conway.....	Earl to Maria.....		3727						
Churchill.....	Front to Van Slyke.....	1103	1263						
College.....	Rice to Third.....		1165						
Como Boul.....	East line of lot 4, block 5, to north line of lot 5, block 1, Warrendale.....		606						
Como Av.....	Park to Dale.....				469	6555			
Chelton.....	Prior to Tatum.....		559						
Cherry.....	267 feet west of Hoffman to Maria.....	267	565						
Case.....	Forest to Terrace.....		345	6551					
Claghorn.....	Lafond to Van Buren.....		628						
Cypress.....	North of Euclid.....	45							
Cromwell.....	Mauvel to Cudworth.....		1599						
Cudworth.....	Bayless to Enstis.....		985						
Clark.....	Whitall to Case.....		1308						
Cross.....	Argyle to Lexington.....		966						
Cambridge.....	Princeton to Lincoln.....		1060						
County Rd.....	Langford to Dooley.....				256				
Crocus Pl.....	Goodrich to Fairmount.....	1314							
Chatsworth.....	Evergreen to Van Slyke.....		983						
Cleveland.....	Lincoln to University.....			3411	3313				
Cortland.....	Capitol to Maryland.....		252		4600				
Cayuga.....	Mississippi to Cortland.....		1630						
Carter.....	West line lot 31, block 40, to County road.....		1886						

## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Dale.....	Fairmount to Reservoir.....	4800		2110	5280	1453	14500	9234	1560
Dayton.....	Third to Cleveland.....	192	11578	4675					
Duluth.....	Seventh to Omaha Ry.....		434						
Dayton Pl.....	West to Maria.....	275							
De Soto.....	Mt. Ida to Lawson.....		3510						
Dawson.....	Arcade to Gotzian.....		3673						
Dooley.....	County road to 15 feet east of Raymond.....		1327						
Earl.....	Burns to Cook.....			3503	2291				
Edmund.....	Rice to Milton.....		8518						
Eichenwald.....	Sixth to Seventh.....		532						
Euclid.....	Maple to Earl.....		2391						
Elfelt.....	Charles to Blair.....	1634							
Edgerton.....	York to Maryland.....			4272					
Everett Ct.....	Wheeler to Great Northern Ry.....		355						
Ellis.....	Raymond to Hampden.....		1218						
Fuller.....	Rice to Lexington.....		8548.3						
Farrington.....	Summit to Lafond.....		3459						
Fauquier.....	290 feet east of Atlantic to Greenbrier.....		6153						
Fifth.....	125 feet east of Hoffman to Maple.....		1543						
Floral.....	Summit to Oakland.....	518							
Fourth.....	Terry to 400 feet west of Maria.....		5342						
Francis.....	Arcade to Cypress.....		1264						
Front.....	Sylvan to Lexington.....		1140	10475	12	12			
Forest.....	Conway to Geranium.....		3113						
Fairmount.....	Dale to Milton.....		2931	518					
Fairview St.....	Valley to 200 feet north of Mt. Alby.....		578						
Feronia.....	Fairview to Prior.....		1378						
Freemont.....	Earl to Arcade.....		2577						
Fairview Av.....	Selby to Capitol.....			2542	1971				
Fry.....	Territorial road to Capitol.....	1087	6						
Force Main.....	Pump house to reservoir.....					7886	70		7386
Flandrau.....	Harvester to Stillwater.....		595						
Grand.....	Lawton to Cretin.....		8865						
Grove.....	Seventh to Pine.....				2618				
Grotto.....	Lincoln to Lafond.....		4594						
Goodrich.....	782 feet east of Dale to Oxford.....		5358						
Greenbrier.....	Arlington to Magnolia.....	512	532						
Gaultier.....	Sherburne to Cook.....		2730						
Gordon.....	Raymond to Carter.....		1387	693					
Geranium.....	Arcade to Burr.....		1919						
Genesee.....	Mississippi to Buffalo.....		814						
Granite.....	Mississippi to Cortland.....		1622						
Hoffman.....	Clearmont to Seventh.....		2946						
Holly.....	Western to Victoria.....		5287						
Hague.....	Dale to Griggs.....		6512						
Hudson.....	Cypress to Maria.....		2380	194					
Hastings.....	Bates to Hester.....			3066					
Hewitt.....	Aldine to Syndicate.....		4541						
Hope.....	Fourth to Seventh.....		1156						
Hampden.....	Raymond to Hersey.....		1733						
Harvester.....	White Bear to Hazel.....			1306					
Hazel.....	Harvester to 300 feet north of Ames.....			980					
Horton.....	Van Slyke to Como Boulevard.....		419						
Harzenbergh Place.....	Lytton place to Atwater.....	349							
Iglehart.....	Wabasha to Cleveland.....		14706						
Jackson.....	Viola to Sycamore.....		236	2237	145				
Jay.....	St. Anthony to Fuller.....		656						
Jenks.....	Forest to Cortland.....		6994						
Jessamine.....	Rice to Cypress.....		8830						
Jessie.....	Case to Maryland.....		2635						
Kent.....	Portland to Carroll.....	2201							
Kenwood Pk.....	St. Albans around said park.....		767						



## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Knapp.....	Langford Ave. to Raymond Ave.		1838						
Keston.....	Dooley to Doswell		924						
Laura.....	Waltham to University		1211						
Laurel.....	Nina to Fisk		8297						
Lawton.....	Grand to Summit		480						
Lawson.....	Earl to Rice		8080						
Lincoln.....	Oakland to Finn		8360						
Louis.....	Nelson to Fuller		2122						
Linden.....	Mt. Airy to Arch		606						
Lafond.....	Rice to Milton		7340						
Lynhurst.....									
E. and W.....	University to Perona		1850						
Lexington.....	Grand to Van Slyke				3818				
Langford.....									
E. P. E.....	Bayless to Knapp		415		427				
Langford.....									
P. P. W.....	Bayless to Gordon		181	670					
Langford Av.....	Scudder to Dooley			1236	838				
Lookout Pl.....	Arkwright to Westminster		447						
Litchfield.....	Rice to Sylvan		1142						
Leslie.....	Victoria to Chatsworth		1256						
Lombard.....	Milton, 454 feet west		454						
Linwood Pl.....	Osceola to Lexington		2621						
Lytton Pl.....	Rice to Sylvan		1142						
Lake Como & Phalen Av.....	At Dale street			23					
Mackubin.....	Summit to Edmund		5708						
Maple.....	Hastings to Seventh		2960	811					
Margaret.....	Gotsian to Greenbrier		4782						
Martin.....	Central to Milton		7739						
Maria.....	River to North		5481						
Marshall.....	Western to 300 feet west of Cleveland		2640	10166					
Mendota.....	Hudson to Panquier		655	3286					
Mt. Airy.....	L'Orient to Robert		2024						
Maryland.....	Dale to Arcade		3855	22					
Marion.....	University to Lafond		1639						
Minnehaha.....	Duluth to Tatum		4364	7473					
Mound.....	Hastings to 335 feet west of Earl								
Milwaukee.....	Merriam Park to Astoria		1298	1536					
Manvel.....	Robbins to Raymond		570						
Magnolia.....	Cypress to 120 feet east of Mississippi		1142						
Mulberry.....	Third to Sixth	435	5698						
Milford.....	Rice to Woodbridge								
McLean.....	Maria to Earl		655						
Minneapolis.....	At Dale		752						
McMenemy.....	Case to Jessamine			15					
Mississippi.....	Great Northern Ry. to Cayuga		1652						
Manitoba.....	Rice to Sylvan		1136						
Macalester.....	Summit to Princeton		1139						
Mt. Ida.....	De Soto to Rivoli		1885						
Milton.....	Victoria to Lombard		535						
Nelson.....	Summit to Western		335.5						
Nina.....	Summit to Selby		2122						
North.....	Maria to Seventh		800						
Nourse.....	Gordon to N. P. Ry		1035						
Oakland.....	Ramsey to Summit Ave.		392						
Olive.....	Olmsted to Pennsylvania		3662						
Oakley.....	Lynnhurst west to Prior		1057						
Osceola.....	Pleasant to Chatsworth		451						
Otsego.....	Lafayette to Mt. Ida		3769						
Park Place.....	Park Drive southwest	574	791						
Park Av.....	Martin to Cook								
Princeton.....	Macalester to Baldwin		2094						
Pine.....	Grove to Pennsylvania		1399						
Portland.....	Summit to Victoria		1820		387				
Pennsylvania.....	Olive to Pine	505	5290						
			342						

## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.
Plum.	Maple to Hoffman.		1150						
Prior.	Selby to University.		804	3447					
Payne.	Omaha Ry. to Ivy.		5629						
Pascal.	Minnehaha to Taylor.		1743						
Pym.	Bayless to Eustis.			736					
Priscilla.	Raymond avenue east.		542						
Pratt.	Raymond to Gibbs.		762						
Phalen.	Seventh to Stillwater.			1407					
Pacific.	Cypress to Hester.		1260						
Pleasant.	Oscocla to St. Albans.			569					
Poplar.	N. P. R. R. yard to Cortland.		889						
Rice.	College to Jessamine.		495	2147	5090	1154			
Robert.	171 feet south of University to 254 north of same.		425						
Ronde.	Rice to Terrace Park Ave.		10061						
Reaney.	English to Greenbrier.		6418						
Ramsey.	Oakland to Summit.		1259						
Ross.	Atlantic to Seventh.		2467						
Ravoux.	Rondo to Fuller.	616							
Elver.	Maria to Hoffman.	359							
Itavine.	Maple to 344 feet west of Maria.	1423							
Raymond.	University to Langford Av.		3203		1588				
Robbins.	Bayless to Raymond Pk.		440						
Rose.	Arcade to Edgerton.		1497						
St. Anthony.	Rice to Cleveland.		13893						
St. Peter.	College to University.		2557						
Selby Av.	Summit to Prior.		17002						
Seventh.	Grove to White Bear Ave.			15025					
Sherburne.	Jackson to Chatsworth.	400	10470						
Sinuen.	Sixth to Seventh.		541						
Suction main.	Pump house to terminal.						925		
Summit Av.	C. P. D. E. to Baldwin.	913	5481	13384					
Summit Pl.	Nelson to Fuller.		2122						
St. Albans.	Pleasant to Martin.	2366	300	556					
Sims.	Edgerton to Earl.		4539						
Summit Ct.	East of Lawton.		362						
Short.	Maria to Hoffman.		591						
Snelling.	Goodrich to G. N. Ry.			11195					
Simpson.	Blair to Hewitt.		1528						
Sixth.	Hoffman to Arcade.		2046						
Sixth.	College to Summit.		537						
Sidney.	Raymond to Ellis.		1225.5						
Scudder.	Blake to Langford Ave.				1347				
St. Clair.	Victoria to Oxford.			1935					
Stinson.	Gaultier to Western.		1266						
Sycamore.	Rice to Cortland.			2509					
Syndicate.	Lincoln to Summit.		967						
Stillwater.	White Bear to Ames.		906						
Tatum.	Minnehaha to Chelton.		541						
Third.	Cypress to Summit.	367	4449						
Thirteenth.	Pine to Broadway.				778				
Tilton.	Wabasha to Rice.		1278						
Thomas.	Como to Chatsworth.		7605						
Topping.	At Como and at Dale.		118						
Taylor.	Charlotte to Holton.		2467						
Territorial road.	Raymond to Eustis.		1498						
University.	Broadway to Cromwell.		40	6387	3504	19164			
Valley.	Broadway to Jackson.				1789				
Viola.	Jackson to Rice.		1053						
Van Buren.	Western to Wheeler.		6919						
Victoria.	St. Clair to Hatch.			375	9518				
Virginia.	Summit to Como.	2758	1798						
Vandalla.	University, north of Charles.		761.3						
Van Slyke.	Chatsworth to Lexington.		1438						
Wabasha.	Summit to Park Ave.	537	542						
Western.	Summit to Como.			1775	6285				
Williams.	Olive to Mississippi.		857						
Waltham.	Laura to Prior.	950							



**WATER MAINS ON HIGH SERVICE—Continued.**

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12 Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Wayzata.....	At Albemarle.....		90						
Wilder.....	Iglehart to St. Anthony.....		1388						
Whitall.....	Payne to Clark.....		2301						
Walker.....	Hewitt to Great Northern Ry.....	807							
Wesley.....	Pascal to Fry.....	394	621						
Workhouse.....	Around workhouse.....		1043						
Wheeler St.....	Bayless to Everett.....			1012					
Westminster.....	Cayuga to Case.....		999						
Wheeler Av.....	University to Shields.....		588						
Woodbridge.....	Atwater to Front.....		1297						
Winnipeg.....	Rice to Sylvan.....		1142						
Wells, N. S.....	Edgerton to Arcade.....		2090						
Wells, south side.....	From E. to W. end of retaining wall.....	1130							
White Bear.....	Seventh to Ames.....			1992					
York.....	Forest to Cortland.....		5782						
Total.....		37749	549880.9	120874	87188	36224	15495	9234	8046
Total 4-inch pipe.....		37749							
Total 6-inch pipe.....		549880.9							
Total 12-inch pipe.....		120874							
Total 16-inch pipe.....		87188							
Total 20-inch pipe.....		36224							
Total 24-inch pipe.....		15495							
Total 30-inch pipe.....		9234							
Total 36-inch pipe.....		8046							

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
HIGH SERVICE, WEST SIDE, TO JAN. 1, 1898.

STREET.	FROM STREET TO STREET.	6-Inch.	12-Inch.	16-Inch.
Annapolis.....	At Manomin.....	100		
Bice.....	Ohio to the park.....	141		
Baker.....	Bidwell to Cherokee.....		3539	
Belvidere.....	South Robert to Oakdale.....	851		
Bidwell.....	Morton to Robie.....		346	362
Bunker.....	Oakdale to Brown.....	1808		
Curtice.....	Oakdale to 250 feet east of Woodbury.....	1437		
Cherokee.....	Annapolis to north line of Smith avenue.....	4349		
	From Annapolis to tank.....		100	
George.....	Stryker to 40 feet west of Manomin.....	3334		
Hall.....	Morton to Louisa.....	894		
Manomin.....	Baker to Annapolis.....		2540	
Morton.....	Robert to Bidwell.....			2672
Oakdale.....	Midway to Curtice.....	1319		
Lo.....	Winona to Winifred.....	3485		
Leans.....	Cherokee to Page.....	2517		
Ge.....	Robert to Harvard.....	1344		170
Ble.....	Bidwell to Bellows.....	522		
Bert.....	Belvidere to Morton.....		594	606
Ste.....	Page to Pump house.....			140
Stryker.....	Tyler to Augusta.....	791		
Mey.....	Ottawa to Cherokee.....	346		
Total.....		23138	7219	3950

al 6-inch pipe..... 23138  
al 12-inch pipe..... 7219  
al 16-inch pipe..... 3950

Total ..... 34307 feet, or 6.4975 miles.

RECAPITULATION OF THE TOTAL MILEAGE OF WATER PIPES IN THE  
CITY, JAN. 1, 1898.

th service ..... 865590.9  
w service ..... 363328.5  
st Side high service..... 34307

Total ..... 1263226.4 feet, or 239.2489 miles.

## INVENTORY OF STOCK AND TOOLS, JAN. 1, 1898.

## PIPES AND SPECIALS.

381 feet 30-inch pipe (castiron).	1 30-inch open sleeve.
252 feet 30-inch pipe (castiron).	1 24-inch open sleeve.
115 feet 24-inch pipe (castiron).	1 20-inch open sleeve.
170 feet 20-inch pipe (castiron).	2 16-inch open sleeves.
139 feet 16-inch pipe (castiron).	1 12-inch open sleeves.
12 feet 14-inch pipe (castiron).	2 6-inch open sleeves.
194 feet 12-inch pipe (castiron).	1 6x6-inch open sleeve.
37 feet 10-inch pipe (castiron).	7 4-inch open sleeves.
478 feet 8-inch pipe (castiron).	30 iron washers for open sleeves.
3310 feet 6-inch pipe (castiron).	2 36-inch plugs.
50 feet 6-inch pipe (castiron), old.	2 24-inch plugs.
891 feet 4-inch pipe (castiron).	4 20-inch plugs.
3498 feet 4-inch pipe (castiron), old.	3 16-inch plugs.
7 feet 3-inch pipe (castiron).	6 12-inch plugs.
6 feet 10-inch pipe (wroughtiron).	9 8-inch plugs.
168 feet 8-inch pipe (wroughtiron).	16 6-inch plugs.
9 feet 6-inch pipe (wroughtiron).	12 4-inch plugs.
12 feet 4½-inch pipe (wroughtiron).	1 30x 6-inch 4-way branch.
61 feet 4-inch pipe (wroughtiron).	1 24x12-inch 4-way branch.
11 feet 3½-inch pipe (wroughtiron).	1 24x 6-inch 4-way branch.
21 feet 3-inch pipe (wroughtiron).	1 24x 4-inch 4-way branch.
8 feet 2½-inch pipe (wroughtiron).	1 16x16-inch 4-way branch.
1 20-inch ¼-bend.	1 16x12-inch 4-way branch.
1 12-inch ¼-bend.	1 12x12-inch 4-way branch.
4 4-inch ¼-bends, with base.	1 12x 8-inch 4-way branch.
4 6-inch ¼-bends, with base.	3 12x 4-inch 4-way branches.
5 30-inch ¼-bends.	9 6x 6-inch 4-way branches.
5 24-inch ¼-bends.	20 6x 4-inch 4-way branches.
1 20-inch ¼-bend.	14 4x 4-inch 4-way branches.
1 16-inch ¼-bend.	3 24x 4-inch 3-way branches.
2 12-inch ¼-bends.	1 16x12-inch 3-way branch.
1 8-inch ¼-bend.	1 16x 6-inch 3-way branch.
15 6-inch ¼-bends.	2 16x 4-inch 3-way branches.
10 4-inch ¼-bends.	1 16x 3-inch 3-way branch.
2 36-inch sleeves.	1 12x12-inch 3-way branch.
1 30-inch sleeve.	2 12x 4-inch 3-way branches.
2 24-inch sleeves.	5 6x 6-inch 3-way branches.
2 20-inch sleeves.	2 6x 4-inch 3-way branches.
5 16-inch sleeves.	2 6x 4-inch 3-way branches.
7 12-inch sleeves.	6 6x 3-inch 3-way branches.
9 8-inch sleeves.	24 4x 4-inch 3-way branches.
18 6-inch sleeves.	1 24x20x20-inch Y.
19 4-inch sleeves.	1 20x20x20-inch Y.
1 16x4-inch sleeve and gate, Smith patent.	1 12x12x12-inch Y.
3 12x6-inch sleeves and gates, Smith patent.	1 20x12-inch reducer.
2 12x4-inch sleeves and gates, Smith patent.	2 16x12-inch reducers.
3 8x6-inch sleeves and gates, Smith patent.	8 12x 6-inch reducers.
2 8x4-inch sleeves and gates, Smith patent.	1 8x 6-inch reducer.
6 6x6-inch sleeves and gates, Smith patent.	3 6x 4-inch reducers.
5 6x4-inch sleeves and gates, Smith patent.	2 manhole frames.
2 6x2-inch sleeves and gates, Smith patent.	3 manhole covers.
	1 36-inch casting for Pleasant Lake intake.
	1 36-inch sluice gate for Pleasant Lake intake, with revolving stand, spindle and bolts

## LUMBER.

## At Yard—

- 60 pieces sheeting, 8 feet long.
- 1 piece 6x6 inches, 12 feet long.
- 1 piece 6x6 inches, 18 feet long.
- 1 piece 2x10 inches, 15 feet long.

## At Reservoir—

- 12 pieces 5x¾-inch, D. and M., 16 feet long.

## At McCarron Pumping Station—

- 100 pieces 2x8-inch sheeting, 10 feet long.
- 33 pieces 3x12-inch sheeting, 16 feet long.
- 2 pieces 10x12-inch sheeting, 21½ feet long.
- 1 piece 10x10-inch sheeting, 18 feet long.
- 4 new piles 24 feet long.



**At Vadnais Lake Pumping Station—**

- 169 pieces 8x2 $\frac{1}{4}$  inches, D. & M., 18 feet long.
- 19 pieces 8x2 $\frac{1}{4}$  inches, 7 feet long.
- 15 pieces 8x2 inches, 7 feet long.
- 28 pieces 6x6 inches, 16 feet long.
- 78 tamarack braces, 4 feet long.

**At Centerville Lake Pumping Station—**

- 30 pieces 4x8 inches, 10 feet long.
- 60 pieces 4x6 inches, 14 feet long.
- 9 pieces 2x10 inches, D. & M., 16 feet long.
- 98 pieces 3x10 inches, M., 13 feet long.
- 20 pieces 3x12 inches, D. & M., 20 feet long.
- 30 pieces 5x2 inches, conduit sheeting, 16 feet long.

**COAL AND WOOD.**

- 190 tons 1,745 pounds Youghiogheny coal, distributed as follows:
- 134 tons at McCarron pumping station.
- 20 tons at West Side pumping station.

- 22 tons 1,745 pounds at Vadnais Lake station.
- 14 tons at Centerville Lake station.
- 543 3-16 cords of mixed wood at Centerville Lake.

**OILS AND WASTE, ETC.****At the Different Pumping Stations—**

- 83 gallons cylinder oil.
- 75 gallons engine oil.
- 84 gallons kerosene.
- 75 pounds waste.
- 5 pounds hemp packing.

- 25 pounds piston rod packing.
- 2 pounds rainbow packing.
- 3 pounds boiler compound.
- 3 pounds polishing paste.
- 24 cans lye.
- 30 bars soap.

**MISCELLANEOUS OTHER MATERIAL.**

- 120 fire brick at West Side station.
- 1000 brick at Centerville.
- 5000 brick at yard.
- $\frac{1}{2}$  barrel cement at Centerville.
- 20 barrels cement at yard.
- 570 pounds pig lead at Centerville.
- 4162 pounds pig lead at yard.
- 60 pounds 60 p. nails at Centerville.

**At Centerville—**

- 290 pieces 4-inch tile drain.
- 9 pieces 4-inch sewer pipe.
- 22 pieces 6-inch sewer pipe.
- 2 pieces 12-inch sewer pipe.
- 8 pieces 9-inch sewer pipe at yard.
- 33 pieces 36-inch sewer pipe at McCarron pumping station.
- 90 feet  $\frac{5}{8}$ -inch round iron.
- 2 rolls tar paper.

**At Yard—**

- 60 pounds yarn.
- 7 pieces cement tiles.
- 1 barrel rock salt.
- 2 gallons black enamel paint.
- 9 coils old telephone wire.
- 5 pounds plumbago.
- $\frac{3}{4}$  keg blasting powder.
- $\frac{1}{2}$  barrel axle grease.
- 3 pounds No. 9 copper wire.
- 327 pounds scrap lead.
- 200 pounds old brass.
- 1 lot old sheet iron.
- 50 pounds 60 p. nails.
- 125 pounds 30 p. nails.
- 15 pounds 20 p. nails.
- 40 pounds 8 p. nails.

**GATES AND GATE BOXES.**

- 1 20-inch Galvin gate.
- 1 16-inch Coffin gate.
- 5 8-inch Coffin gates.
- 1 6-inch B. & M. gate, old.
- 8 4-inch Coffin gates.
- 1 4-inch B. & M. gate, old.
- 4 4-inch Ludlow gates, old.
- 1 4-inch Eddy gate, old.
- 1 6-inch Ludlow gate, old (single faced).
- 10 4-inch Ludlow gates, old (single faced).
- 8 3-inch Galvin gates.
- 17 gate boxes for 16 to 24 inch gates.
- 10 gate boxes for 12-inch gates.
- 12 gate boxes for 6-inch gates.

- 11 gate boxes for 4-inch gates.
- 6 extra bases for 6-inch gate boxes.
- 6 extra bases for 4-inch gate boxes.
- 8 middle stems for gate boxes.
- 13 covers for gate boxes, flat, for paved streets.
- 108 covers for gate boxes, rounded for dirt streets.
- 1 dome and face for 16-inch Ludlow gate.
- 2 domes for 4-inch B. & M. gate.
- Lot of small duplicates for gate valves.
- 1 pattern divider for 16-inch R. D. W. gate.



3 2-inch brass Ls for air vents.  
 5 spindles for 4-inch B. & M. gates.  
 2 spindles for 6-inch B. & M. gates.  
 11 spindles for 16-inch R. D. W.  
 2 spindles for 20-inch R. D. W.  
 1 spindle for 24-inch R. D. W. gate.  
 1 spindle for 16-inch Galvin gate.  
 8 spindles for 4-inch Ludlow gate.

4 spindles for 6-inch Ludlow gate.  
 1 spindle for 12-inch Ludlow gate.  
 1 spindle for 16-inch Ludlow gate.  
 1 gate wrench 11¼ feet long.  
 5 gate wrenches 8 feet long.  
 2 gate wrenches 6 feet long.  
 2 always-ready wrenches, No. 2¼ and No. 3.

## HYDRANTS AND STANDPIPES.

9 D. S. hydrants, complete.  
 13 S. S. hydrants, complete.  
 1 D. S. hydrant without casing, reserve.  
 2 S. S. hydrants, without casings, reserve.  
 2 D. S. hydrant casings.  
 1 S. S. hydrant casing.  
 2 hydrant nozzle reducers.  
 2 hydrant caps for gauges.  
 18 hydrant brass top nuts.  
 7 tops for D. S. hydrants.  
 15 tops for S. S. hydrants.  
 12 large caps for hydrants.  
 12 small caps for hydrants.  
 1 set standard samples for hydrants.  
 2 6-inch plugs with 2-inch holes.  
 42 4-inch plugs with 2-inch holes.  
 48 rubber washers for D. S. hydrants.  
 53 rubber washers for S. S. hydrants.  
 16 6-inch bases for hydrants.  
 9 4-inch bases for hydrants.  
 5 D. S. hydrant rods.  
 9 S. S. hydrant rods.  
 10 S. S. hydrant rods, old.  
 10 stuffing boxes for D. S. hydrants.  
 25 stuffing boxes for S. S. hydrants.  
 2 brass ring valves for D. S. hydrants.  
 12 brass ring valves for S. S. hydrants.  
 2 brass seats for D. S. hydrants.  
 12 brass seats for S. S. hydrants.  
 9 globe valves for D. S. hydrants.  
 23 globe valves for S. S. hydrants.  
 8 brass ring valve nuts (for fire hydrants).  
 7 globe valve nuts (for fire hydrants).  
 13 revolving nuts (for fire hydrants).  
 7 5-inch extra brass nozzles.  
 17 3-inch extra brass nozzles.

26 Holly hydrant rods.  
 12 hydrant drip boxes.  
 10 sprinkling standpipe casings, complete.  
 3 extra bases for standpipe casings.  
 10 sprinkling attachment casings with box of bolts.  
 12 stuffing boxes for sprinkling attachment.  
 2 sprinkling standpipe casings.  
 13 2-inch top valves for standpipes.  
 12 2-inch top valves for standpipes, old.  
 7 2-inch 45 deg. elbows.  
 7 2-inch 90 deg. elbows, straight.  
 5 2-inch 90 deg. elbows, plain.  
 162 feet 2-inch galvanized pipe.  
 300 feet ¾-inch to 2½-inch galvanized pipe, old.  
 54 pieces 5 feet long 2½-inch hose for standpipes.  
 17 hydrant wrenches.  
 1 spanner.  
 5 socket wrenches for repairs.  
 2 seat wrenches for repairs.  
 3 Coe's wrenches.  
 3 S. wrenches.  
 2 wrenches for standpipes.  
 1 pair connectors.  
 1 pair plyers.  
 1 ½-inch suction drip pump.  
 1 No. 5 chain tong.  
 2 sets of light tackle blocks with ¾-inch rope.  
 2 ratchets.  
 1 stock and dies from ¾ to 1 inch.  
 2 chains 6 feet long.  
 2 boilers for steaming out frozen hydrants.  
 3 pieces ¾-inch hose for steaming, 16 feet long.  
 22 caps for standpipe casings.

## PIPE-LAYING TOOLS.

1 tool box.  
 23 picks without handles.  
 6 sledge hammers.  
 1 striking hammer.  
 4 mauls, complete.  
 6 mauls without rings and handles.  
 24 sledge handles.  
 1 4-legged derrick.  
 2 3-legged derricks.  
 3 pipe-laying chains, 12 feet, 9 feet and 7 feet.  
 1 gearing and drum to derrick.  
 8 turned poles for derrick.  
 1 2-legged derrick for tunnel use.  
 2 2-wheeled pipe trucks with one extra wheel.

4 wheelbarrows for tunnel use.  
 1 dirt scraper.  
 2 puddling bars and wrench.  
 1 crowbar.  
 1 crowfoot.  
 4 rock gads.  
 11 rock drills.  
 4 steel wedges.  
 3 hoisting buckets.  
 3 iron bands with screw bolts.  
 1 pipe cutter for 4 to 8-inch.  
 1 pipe cutter for 10 to 16-inch.  
 10 cutting chisels.  
 7 cape chisels.  
 12 caulking sets.  
 11 yarning tools.

- 19 cold chisels.
- 4 caulking set tongs.
- 3 caulking hammers.
- 11 diamond points.
- 6 iron dirt rammers.
- 3 tamping bars.
- 3 pipe tamping rammers.
- 15 pairs cement pipe molds.
- 10 pounds small rivets to cement mains.
- 6 sand rock picks.
- 1 Smith patent tapping machine for 2 to 6-inch.
- 1 plug and feather drill.
- 1 Edison diaphragm pump with extra handle.
- 2 Bagnall & Land diaphragm pumps with four duplicate pieces.
- 2 3-inch suction hose, 16 feet long.

- 1 3-inch suction hose, 8½ feet long.
- 1 3-inch suction hose, 5 feet long.
- 3 flanges for 4-inch wrought pipe.
- 4 double tackle blocks with 1¼-inch rope.
- 1 single tackle block with 1¼-inch rope.
- 2 mortar hoes.
- 1 No. 3 pipe chain tong.
- 3 pairs 2-inch extension pipe tongs.
- 1 pair 2-inch pipe tongs.
- 2 pairs 1-inch pipe tongs.
- 2 pairs ¾-inch pipe tongs.
- 3 lead pots.
- 3 furnaces.
- 4 lead ladles.
- 1 lead pot on wheels.
- 14 pipe stirrups.

## CONNECTION STOCK AND TOOLS.

- 1081 pounds 1½-inch lead pipe.
- 880 pounds 1¼-inch lead pipe.
- 255 pounds 1¼-inch lead pipe, old.
- 754 pounds 1-inch lead pipe.
- 1213 pounds ¾-inch lead pipe.
- 1100 pounds ¾-inch lead pipe.
- 508 pounds ½-inch lead pipe.
- 95 pounds solder.
- 255 pounds solder, old.
- 7 pipes with faucets, 5 feet long.
- 2 Fuller faucets.
- 13 2-inch stop and waste valves, old.
- 9 1½-inch stop and waste valves.
- 8 1¼-inch stop and waste valves.
- 16 1-inch stop and waste valves.
- 56 ¾-inch stop and waste valves.
- 29 ¾-inch stop and waste valves.
- 1 2-inch check valve.
- 5 ¼-inch valves.
- 6 1-inch corporation cocks.
- 38 ¾-inch corporation cocks.
- 118 ¾-inch corporation cocks.
- 5 unions from ¾-inch to 2-inch.
- 86 plugs from ½-inch to 2-inch.
- 192 Dwyer patent stop boxes.
- 50 Bingham & Morgan patent stop boxes.
- 10 Bingham & Morgan patent bases for stop boxes.
- 1 sample stop box.
- 1 lot of old pieces to stop boxes.
- 25 iron top pieces for cement stop boxes.
- 4 extra castings for stop box covers.
- 162 brass bolts for stop box covers.
- 7 stop box bases.
- 20 goose necks ½-inch to 1-inch for corporation cocks.
- 3 tunneling bars.
- 9 shovels.
- 3 dirt rammers.
- 2 asphalt axes.
- 1 sand auger.
- 2 connection drills.
- 9 drill hole scrapers.
- 1 drill hole jump.
- 3 sand augers.
- 5 sand scoops.
- 10 sand scoop and auger handles.
- 1 electric lattery.
- 200 feet connecting wire.

- 150 dynamite caps.
- 36 pieces blasting timbers.
- 9 blasting chains.
- 1 solder iron.
- 2 solder pots.
- 3 small solder molds.
- 2 gasoline furnaces.
- 1 lead pot furnace.
- 1 hand force pump, old.
- 1 1-inch force pump.
- 49 feet 1-inch hose.
- 21 feet ¾-inch hose.
- 1 pipe cutting machine for ½-inch to 2-inch.
- 2 Mueller tapping machines for ½-inch to 1-inch.
- 1 kit plumber's tools.
- 1 tool box.
- 7 folding rods for turning on and off.
- 7 straight rods for turning on and off.
- 2 pipe rimmer handles.
- 2 2-inch taps.
- 1 1½-inch tap.
- 1 1¼-inch tap.
- 1 1-inch tap.
- 1 ¾-inch tap.
- 1 ½-inch tap.
- 2 ¾-inch taps.
- 1 2-inch rimmer.
- 1 1½-inch rimmer.
- 1 1¼-inch rimmer.
- 1 1-inch rimmer.
- 2 2-inch drills.
- 1 1½-inch drill.
- 1 1-inch drill.
- 1 ¾-inch drill.
- 1 ½-inch drill.
- 1 ¾-inch drill.
- 1 extra 13-16-inch drill.
- 1 extra 15-16-inch drill.
- 1 pair of compasses.
- 1 pair of callipers.
- 1 pair of shears.
- 1 ball face hammer.
- 1 draw knife.
- 2 14-inch flat bastard files.
- 2 round files.
- 1 hand axe.
- 1 monkey wrench.
- 1 Stilson wrench.

## STABLE AND YARD.

4 horses.	2 tape lines.
1 light truck.	3 spirit levels.
2 light wagons.	1 work bench with 2 vices.
2 buggies.	1 anvil.
2 light bob sleighs.	1 log hook.
2 cutters.	2 drag forks.
4 sets single harness.	1 peavy.
5 horse blankets.	3 pairs of grab tongs.
22 pairs bedding blankets.	1 pair of ice tongs.
4 robes.	1 $\frac{3}{4}$ -inch hose for washing buggies.
2 manure forks.	1 sand screen.
Quantity feed for horses.	1 bowl and tank for water closet.
2 farmers' kettles.	1 wash basin with 3 marble slabs.
1 box wood stove.	12 sash weights.
18 pairs rubber boots.	1 handsaw.
23 lanterns.	1 garden rake.
7 tubular lanterns.	2 grub hoes, old.
13 lamp globes, extra.	18 jack screws.
2 tents.	1 drag rake.
1 grindstone.	1 1-inch auger.
1 shovel.	3 branding stamps.
1 wheelbarrow.	1 cast shoe, cone-shaped, for 8-inch pipe.
4 brooms.	1 wheel knife for plow.
2 steel brooms.	6 hydrant caps for $\frac{3}{4}$ -inch hose connection.
1 writing desk.	5 2-inch brass nozzle reducers.
4 1-gallon cans.	3 $2\frac{1}{4}$ -inch hose couplings.
1 5-gallon can.	2 2-inch hose couplings.
2 pairs window sash.	200 feet $2\frac{1}{4}$ -inch hose.
1 beam scale.	1 5-inch hose, 5 feet long.
2 platform scales, Fairbanks'.	150 feet 1-inch rope, new.
5 empty kerosene barrels.	36 feet 1-inch rope, old.
1 spade.	213 feet $\frac{1}{4}$ -inch rope, new.
1 garden hose.	200 feet $\frac{1}{2}$ -inch rope, old.
1 plow.	85 feet $1\frac{1}{4}$ -inch rope, old.
1 sod cutter.	300 feet $\frac{3}{4}$ -inch rope, old.
1 well measure windlass.	
6 wire cable couplings.	

## MIDWAY STATION.

## Gates—

- 1 6-inch gate box, complete.
- 1 valve rod.
- 3 gate wrenches.

## Hydrants—

- 1 S. Mathew hydrant.
- 5 globe valves.
- 1 ring valve.
- 1 valve seat.
- 1 stuffing box.
- 1 revolving nut.
- 2 hydrant wrenches.
- 1 seat wrench.
- 3 monkey wrenches.
- 4 standpipe wrenches.
- 3 files, 14 inches long.
- 1 rasp, 14 inches long.

## Pipe-Laying Tools.

- 1 pipe cutter.
- 4 picks.
- 7 shovels.
- 1 set tackle blocks.
- 1 dirt scraper.
- 1 3-legged derrick.
- 1 wheelbarrow.
- 2 16-pound sledges.
- 3 chains, 6 feet long.
- 1 striking hammer.
- 1 pipe rammer.
- 1 tunnelling bar.
- 1 caulking hammer.
- 2 yarning tools.
- 5 caulking sets.
- 6 diamond points.
- 1 cutting chisel.
- 1 cold chisel.

- 3 cape chisels.
- 2 pairs set tongs.
- 1 crowbar.

## Connection Stock and Tools—

- 3 1-inch corporation cocks.
- 10  $\frac{3}{4}$ -inch corporation cocks.
- 7  $\frac{1}{2}$ -inch corporation cocks.
- 7 1-inch stop and waste cocks.
- 8  $\frac{3}{4}$ -inch stop and waste cocks.
- 1 stop cock rod.
- 8 stop cock poles.
- 2 faucets with 3 feet pipe.
- 15 brass nipples,  $\frac{1}{4}$ -inch to  $1\frac{1}{2}$ -inch.
- 1 Muller tapping machine.
- 1 gasoline furnace.
- 2 solder lades.
- 1 lead ladle.
- 1 shave hook.
- 1 pair  $\frac{3}{4}$ -inch pipe tongs.
- 2 pairs plyers.
- 1 turn pin.
- 1 bending iron.

## Stable and Miscellaneous—

- 1 truck.
- 1 manure fork.
- 1 garden hose.
- 1 grindstone.
- 25 feet 1-inch rope.
- 4 lanterns.
- 1 work bench with pipe vise.
- 1 spirit level.
- 1 buck saw.
- 1 handsaw.
- 1 mason's trowel.
- 2 small augers.
- 1 row boat.

## HIGH SERVICE RESERVOIR.

**Dwelling--**

- 4 chairs.
- 1 rocker.
- 1 rug, 7x9 feet.
- 1 table.
- 1 screen door.
- 3 window shades.
- 2 storm doors.
- 2 scythes.
- 4 cellar storm windows.
- 12 storm windows.
- 8 shovels.
- 4 picks.
- 1 lawn mower.
- 5 scythe stones.
- 10 window screens.
- 1 grindstone.
- 2 gate wrenches.
- 1 air vent rod.
- 2 stop wrenches for valves.
- 2 sets sprinkling hose.
- 1 spade.
- 2 rakes.
- 1 sickle.
- 1 manure fork.

- 1 coal stove with 6 pieces stove pipe.
- 1 paint brush.
- 60 feet  $\frac{1}{2}$ -inch rope.
- 6 16-pound sledge hammer.
- 2 mortar hoes.

**Shed--**

- 1 pick.
- 5 shovels.
- 1 sledge.
- 2 lagging caps.
- 2 grub hoes.
- 1 wheelbarrow.
- 1 chain, 9 feet long.
- 2 dirt rammers.
- 6 concrete buckets.
- 6  $\frac{1}{2}$ -inch pipes, 6 feet long.
- 3 steel brooms.
- 2 wooden scrapers.
- 5 sections  $\frac{1}{2}$ -inch hose, 50 feet long.
- 3 hose nozzles.
- 4 floating rafts.
- 1 1-gallon oil can.
- 1 bundle shingles.

## McCARRON PUMPING STATION.

- 1 vise.
- 1 set of screw dies and taps from  $\frac{1}{4}$  inch to 1 inch.
- 1 set of pipe dies and taps from  $\frac{1}{4}$  inch to 2 inches.
- 2 pipe cutters.
- 1 pair 2-inch pipe tongs.
- 1 24-inch pipe wrench.
- 1 12-inch pipe wrench.
- 1 24-inch Coe's wrench.
- 1 14-inch Coe's wrench.
- 1 8-inch Coe's wrench.
- 1 portable blacksmith forge.
- 1 anvil.
- 1 sledge hammer.
- 2 hand hammers.
- 1 soft hammer.
- 6 files.
- 2 saws.
- 1 ax.
- 1 hatchet.
- 1  $1\frac{1}{2}$ -ton chain block.
- 1 3-ton chain block.
- 25 feet  $\frac{1}{4}$ -inch rubber hose.
- 1 24-inch square.
- 6 chairs.
- 2 ladders.
- 2 step ladders.
- 1 good cupboard.
- 1 oil and waste cupboard.
- 1 work bench.
- 5 cuspidors.
- 1 racket.
- 1 racket, brace and bit.
- 4 jack screws.
- 75 feet  $\frac{3}{4}$ -inch rope and block.
- 1 draw knife.
- 1 planer.

- 6 chisels.
- 1 Edison recording gauge.
- 1 Thompson's indicator.
- 1 lot of old pipe and fittings.
- 2 gate wrenches.
- 3 steel brooms.
- 2 brooms.
- 1 pair rubber boots.
- 50 feet  $\frac{3}{4}$ -inch rubber hose.
- 3 oil tanks.
- 3 2-quart oil cans.
- 2 3-quart oil cans.
- 4 hand oilers.
- 1 quart measure.
- 1 12-inch level.
- 1 steel coal wheelbarrow.
- 3 coal scoops.
- 2 coal hammers.
- 1 Fairbanks 6-ton scale.
- 1 Fairbanks 1000-pound scale.
- 1 grindstone.
- 3 large lanterns.
- 4 small lanterns.
- 1 clock.
- 1 writing desk.
- 50 electric lamps.
- 4 shovels.
- 1 water pail.
- 1 Concord buggy.
- 1 regrounding valve machine,  $\frac{1}{4}$  to 4 inch.
- 1 old 54-inch boiler front.
- 1 stove, with pipe at terminal chamber.
- 1 manhole wrench.
- 1 lot of old castings, pipes and fittings from  $1\frac{1}{2}$  and 3-inch pumps.
- 1 set of brass valves from 3-inch pump.

## TOOLS FOR CONSTRUCTION WORK.

- 2 sets heavy tackle blocks and rope.
- 2 sets light tackle blocks and rope.
- 2 sets single tackle blocks.
- 2 dirt scrapers.
- 1 wooden arch center.
- 1 sand screen.
- 2 hand sand screens.

- 2 mortar hoes.
- 3 water buckets.
- 1 spirit level.
- 2 heavy lagging caps.
- 2 light lagging caps.
- 2 cross-cut saws.
- 1 saw set.
- 1 buck saw.



- 2 hatchets.
- 2 bridge augers.
- 1 square.
- 1 log carrying hook.
- 1 ax.
- 1 4-legged derrick.
- 6 wheel barrows.
- 1 sledge hammer.
- 10 mauls.
- 2 grub hoes.
- 1 sledge.
- 3 sand rock picks.
- 4 picks.
- 20 shovels.
- 5 long-handled shovels.
- 2 crow bars.
- 1 rock gad.
- 1 tunneling bar.
- 1 sand scoop and handle.
- 1 gasoline blower torch.
- 2 tool boxes.
- 1 plug and feather drill.
- 4 cape chisels.
- 5 cold chisels.
- 4 cutting chisels.
- 2 diamond points.
- 2 yarning tools.
- 2 pipe gaskets.
- 2 gasket clamps.
- 1 monkey wrench.
- 3 caulking hammers.
- 4 caulking sets.
- 1 pair caulking tongs.
- 1 pair 2-inch extra pipe tongs.
- 1 pair 1½-inch pipe tongs.
- 1 lot old rope in pieces.
- 1 lot old telephone poles.
- 1 large truck for hauling 20 to 30-inch pipes (4 wheeled).
- 1 large truck for hauling 12 to 20-inch pipes (2-wheeled).

## WEST SIDE PUMPING STATION.

- 1 24-inch pipe wrench.
- 1 14-inch Coe's wrench.
- 1 hand saw.
- 1 ax.
- 1 hatchet.
- 3 oil tanks.
- 1 1000-pound Fairbanks scale.
- 1 vise.
- 1 work bench.
- 2 coal shovels.
- 1 wardrobe.
- 1 clock.
- 3 large lanterns.
- 1 writing desk.
- 2 chairs.
- 1 gate wrench.
- 1 steel coal wheelbarrow.
- 1 cuspidor.
- 1 step ladder.
- 1 set engineer 5-piece brass hand oilers.
- 2½-gallon measures.
- 2 hand oilers.
- 1 set of wrenches for pumps.
- 1 set fire tools.
- 25 feet of ¾-inch steam hose.
- 1 lawn mower.
- 100 feet of ¾-inch garden hose.
- 1 hay rake.
- 1 4-inch flue cleaner.
- 25 feet of 1-inch hose.

## VADNAIS LAKE PUMPING STATION.

## Gate House—

- 4 storm windows.
- 4 window screens.
- 2 brooms.
- 1 steel broom.
- 1 shovel.
- 1 galvanized pail.
- 1 ice chisel.
- 1 ice saw.
- 4 steel traps.
- 2 gate wrenches.
- 1 gate lock and key
- 1 boat chain.
- 1 row boat.
- 1 pair oars.
- 1 pair rubber boots.
- 2 hammers.
- 2 hand lanterns.
- 5 large globe lanterns.
- 1 spirit level.
- 1 paint brush.
- 1 hand saw.
- 1 wooden rod with ball joint for flue.
- 1 3-inch steel flue cleaner.
- 1 cleaner.
- 3 50-gallon oil tanks.
- 1 coal pick.
- 2 scoop shovels.
- 50 feet 1-inch rubber hose and nozzle.
- 20 feet 1¼-inch rubber hose and nozzle.
- 3 oil cans.
- 1 automatic oil tilter.
- 1 step ladder.
- 1 shovel.
- 1 pick.
- 1 vise.
- 1 steel coal wheelbarrow.
- 1 grindstone.
- 1 ax.
- 1 grub hoe.
- 1 brush hook.
- 1 draw knife.
- 1 writing desk.
- 2 chairs.
- 1 cuspidor.
- 1 iron block plane.
- 1 tray brass oiler.
- 2 steel oilers.
- 1 brace and bit.
- 1 belt punch and rivet set.
- 1 1384 scale.
- 1 Fairbanks platform scale.

## Dwelling House—

- 15 storm windows.
- 15 window screens.
- 2 screen doors.
- 1 thermometer.
- 1 hand pump.
- 1 kalsomine brush.
- 2 storm doors.
- 2 ventilators for chimneys.

## Pumping Station—

- 1 heating stove.
- 1 8-day clock.
- 2 S. wrenches.
- 4 monkey wrenches.
- 2 Stillson pipe wrenches.
- 2 cold chisels.
- 4 files.

## BALDWIN LAKE PUMPING STATION.

- |  |   |
|--|---|
| 1 No. 10 centrifugal pump.                         | 1 3½-inch steam flue cleaner.           |
| 1 force pump for drinking well.                    | 1 4-inch old gate valve.                |
| 1 hand push car.                                   | 1 3-inch old safety valve.              |
| 200 lineal feet second-hand light rail-road track. | 12 brass springs.                       |
| 1 flat boat.                                       | Some old pipe and fittings.             |
| 1 set wrenches for pumps.                          | 2 low pressure pistons.                 |
| 2 gate wrenches.                                   | 1 old smokestack, 34 inches by 45 feet. |

## CENTERVILLE LAKE PUMPING STATION.

- |                              |  |
|------------------------------|--|
| 1 vise.                      | 2 crow bars.                               |
| 1 pair pipe tongs.           | 6 chisels.                                 |
| 1 24-inch pipe wrench.       | 4 files.                                   |
| 1 12-inch pipe wrench.       | 2 caulking tools.                          |
| 1 24-inch Coe's wrench.      | 2 steel hand oillers.                      |
| 1 14-inch Coe's wrench.      | 1 No. 3 Blake boiler feed pump.            |
| 1 8-inch Coe's wrench.       | 1 box stove for wood.                      |
| 1 hand hammer.               | 40 feet stove pipe.                        |
| 1 coal hammer.               | 1 writing desk.                            |
| 2 saws.                      | 1 set steel wrenches for pumps.            |
| 1 hatchet.                   | 1 lantern support.                         |
| 1 ax.                        | 3 cuspidors.                               |
| 3 oil tanks.                 | 8 wooden wheelbarrows.                     |
| 2 1-quart cans.              | 1 empty tool box.                          |
| 2 3-quart cans.              | 1 boat, 16 feet by 4 feet by 14 inches.    |
| 1 steel coal wheelbarrow.    | 1 sand screen.                             |
| 2 coal scoops.               | 1 post auger.                              |
| 1 grindstone.                | 1 roller toboggan.                         |
| 6 large lanterns.            | 1 gate wrench, 4 feet long.                |
| 2 hand lanterns.             | 1 gate wrench, 11 feet long.               |
| 3 bracket lamps.             | 6 granite blocks for monuments.            |
| 1 clock.                     | 1 timber carrier.                          |
| 1 draw knife.                | 200 ½-inch steel bands for wooden conduit. |
| 1 ratchet, brace and bit.    | 6 hand braces.                             |
| 1 chain.                     | 6 ratchet wrenches.                        |
| 1 2-ton chain block.         | 7 scoop shovels, new.                      |
| 1 4-inch steam flue cleaner. | 6 chisels.                                 |
| 25 feet 1½-inch rubber hose. | 5 files.                                   |
| 1 pair rubber boots.         | 11 straight steel wrenches.                |
| 1 ¾-inch auger.              | 3 hand hammers.                            |

# CITY ENGINEER'S REPORT.

OFFICE OF CITY ENGINEER,  
ST. PAUL, MINN., JAN. 1, 1898.

*To the Board of Water Commissioners.*

GENTLEMEN: I submit herewith my annual report of the work of construction, surveys, etc., of the water department which has been done under the direction of the engineering department during the year ending Dec. 31, 1897, together with some recommendations for future extensions.

The following statement embraces the principal contracts and construction work during the year:

Fencing right of way of Centerville conduit line. Joseph Lamotte, contractor, contract finished.....	\$703.71
Ten million gallon pumping engine for McCarron Lake pumping station, E. P. Allis Co., contractors. Contract price.....	22,700.00
Shop inspection of ten million gallon pumping engine at McCarron Lake pumping station. Contract price.....	850.00
New outlet and weir chamber for Pleasant Lake, gate valve and special castings, South Park Foundry, contractors. Contract price .....	257.30
Weir chamber and inlet to reservoir for 36-inch force main. Total cost .....	1,705.25
Thirty-inch Venturi meter for low service main, Builders' Iron Foundry, contractors. Contract price.....	1,151.75
Dwelling house at Centerville Lake pumping station, W. H. Jackson, contractor. Contract finished.....	1,474.00
Boiler for McCarron Lake pumping station, John Kenny, contractor. Contract price .....	1,223.00
New arrangement of discharge and suction main at McCarron Lake pumping station. Special castings, Howard-Harrison Iron Co., contractors. Contract price.....	945.50
Weir at Vadnais Lake pumping station. Total cost.....	1,253.51
Pipe connection for new artesian wells, Vadnais Lake. Total cost .....	1,632.29
Foundation and pier for ten million gallon pumping engine at McCarron Lake station. Total estimated cost.....	2,000.00
Expended in 1897.....	1,600.00

CONTRACTS LET IN PREVIOUS YEARS AND UNDER CONSTRUCTION  
IN 1897.

Otter Lake conduit, Ransome Subway Co., contractors. Contract price .....	\$8,850.79
Estimates allowed in 1897.....	413.29
Fifteen million gallon pumping engine at Centerville Lake pumping station. Contract price.....	20,700.00
Estimates allowed in 1897.....	10,000.00
Centerville extension, wooden conduit, Hennessy & Cox, contractors. Contract price .....	30,758.30
Estimates allowed in 1897.....	1,346.25
Pump house, Centerville pumping station, Hennessy & Cox, contractors. Contract price .....	9,486.00
Estimates allowed in 1897.....	50.00
Boiler at McCarron Lake pumping station, John Kenny, contractor. Contract price.....	1,162.50
Estimates allowed in 1897.....	176.00
Two artesian wells at Vadnais Lake pumping station, S. Swanson, contractor. Contract price.....	1,095.20
Estimate allowed in 1897.....	1,095.20
Smokestack at Centerville pumping station. Contract price...	270.00
Estimates allowed in 1897.....	270.00
Grading on Centerville conduit line, Nicholas Feyen, contractor. Contract price .....	1,145.00
Estimate allowed in 1897.....	50.00

TEN MILLION GALLON PUMPING ENGINE AT McCARRON LAKE  
PUMPING STATION.

In accordance with the recommendations of my last report, a contract was let for a ten million gallon vertical, triple expansion pumping engine for the McCarron Lake pumping station, to E. P. Allis Company, for \$22,700, a remarkably low price, and very considerably below the average bid. The old one and a half-million gallon engine, which was the first pumping engine erected, has been sold to the park board and removed to Lake Como. The foundations for the new engine are nearly completed, and it is expected that the machinery for the new pump will begin to arrive about the middle of January, 1898. With the completion of this engine we shall have a pumping capacity at McCarron Lake of twenty million gallons per day, which ought to be sufficient for the next ten years unless there should be a very large increase in the amount of consumption.

WEIR ON FORCE MAIN.

A weir has been placed on the thirty-six-inch force main which was laid last year from the pumping station to the reservoir, just before the pipe enters the reservoir. This will enable us to test the new ten million gallon pump which was contracted for, and will also enable us to check



from time to time the efficiency of the pump and determine whether the valves are acting properly.

With this weir and the two Venturi meters on the low service line, our annual consumption of water can be determined with great accuracy.

#### VENTURI METER.

A thirty-inch Venturi meter has been purchased and placed in position on the low service thirty-inch main from Vadnais Lake supply, near the terminal chamber, and we shall now be able to determine more accurately the exact amount of water used on this system, and any unusual leakage or waste can be readily detected. Information thus obtained will also be found very valuable in fixing the rate and determining future extensions. The recording apparatus will be placed in the McCarron Lake pumping station as soon as the foundation for the new pump is completed.

#### VADNAIS LAKE PUMPING STATION.

Connections have been made with the two additional artesian wells which were put down last year at the Vadnais Lake pumping station. The total number of artesian wells connected up at this station at the present time is nine; two deep wells, ten inches in diameter, and seven shallow wells, eight inches in diameter, with Cook strainers.

They now furnish, when the plant is in operation, a supply of five million gallons per day. A weir and settling basin has also been put into the discharge pipe between the pumps and the conduit, both to give us an accurate measurement of the water and to determine whether the water cylinders of the pumping engine are filling properly, also to catch any sand pumped from the artesian wells and prevent it from getting into the conduit.

With the addition of the two wells we are getting much better results. The slip of the pump is reduced to about eight per cent, and we are obtaining a duty of fifty-three million foot pounds.

#### EXTENSION OF THE PHALEN LAKE SYSTEM.

A considerable amount of pipe has been relaid in the district between Broadway and Jackson, and Seventh and Grove streets during the past season, as the old pipes, which were the first laid in the city, were becoming too small for the service. Arrangements were made in laying these pipes so that this district, which can be extended west as far as Cedar street, could be supplied both from the Phalen Lake system and from the Vadnais Lake system. This will increase the amount of water supplied from the Phalen Lake system about forty per cent whenever there is a sufficient amount on hand to supply this increased territory. It can at any time be changed to the Vadnais Lake system by shutting off a few valves.

## PLEASANT LAKE OUTLET.

Surveys and plans have been made for putting in an outlet at Pleasant Lake whereby in case of emergency about two feet more can be drawn off the lake at the present time, and the amount of water taken from the lake can be measured accurately. The unusual amount of rainfall and the continued high water in the lake has rendered it inexpedient to do the work during the past season. I would recommend, however, that the plans be carried out at the first favorable opportunity, as the present flume has been in for a number of years, is not in good condition and requires constant watching.

## CENTERVILLE PUMPING ENGINE.

The final test of the fifteen million gallon, vertical, compound condensing engine at Centerville Lake took place August 16-17. The following is the report of Mr. A. Munster, assistant engineer in charge of the same:

ST. PAUL, MINN., Aug. 20, 1897.

Mr. L. W. Rundlett, City Engineer,

DEAR SIR: I herewith submit my report on the duty test of the fifteen million gallon pumping engine at Centerville pumping station.

The test was of twenty-four hours' duration, commencing at noon, August 16th, ending the same hour on the following day.

The pumping chambers did not fill entirely (within 4.5 per cent) owing to insufficient supply of water, and according to the terms of the contract the work performed by the engine on the up-stroke has been determined from the plunger displacement, and on the down-stroke from the weir measurement.

The data obtained by the test are as follows:

Area of pump plunger (square inches).....	1166.63
Length of stroke (feet).....	3
Total number of revolutions.....	44,007
Average suction lift (feet).....	21.13
Average pressure lift (feet).....	26.37
Average quantity of water pumped (cubic feet per second).....	23.65
Total amount of steam (pounds).....	56,551
Duty developed per 1,000 pounds steam (foot pounds).....	109,234,552
Or fifteen per cent above duty guaranteed by the contract (95,000,000).	
The total amount of water pumped (weir measurement) during the twenty-four hours was 15,285,400 gallons, or 1.9 per cent above the guaranteed capacity.	

The following information in regard to the performance of the boiler during the test may be of interest as showing the general efficiency of the plant.

Total amount of coal consumed (pounds).....	6,816
Total amount of ashes (pounds).....	660
Total amount of combustible (pounds).....	6,156

Total amount of water evaporated from 102° (pounds).....	56,551
Evaporation from and at 212° per pound of combustible (pounds)...	10,365
Evaporation from feedwater temperature per pound of coal (lbs.).	8,297

Respectfully submitted,

A. W. MUNSTER,  
Assistant Engineer.

The result is very satisfactory as showing that the engine was fully up to the requirements of the specifications. I would call your attention also to the very excellent results obtained from the boiler. But one tubular boiler was used, sixty inches in diameter, sixteen feet long. It is certainly a good showing for a boiler of that capacity.

#### CENTERVILLE LAKE WELLS.

No long continued test of the Centerville Lake artesian well system, which was completed last year, has been made, for the reason that on account of abundant water supply in the Pleasant Lake system there has been no occasion to take water from the Centerville Lake system since the completion of the plant. Short tests, however, made at different times, have demonstrated that these wells may be expected to furnish about eight million gallons of water per day, which is very close to the amount estimated. The water obtained is of the very best quality and forms a valuable auxiliary to our water supply. It is probable that after being in use for some time and the fine sand pumped out, the wells will develop a still larger supply. With the completion of these wells, and the erection of the wooden conduit, an abundant supply of pure water is secured to the city of St. Paul sufficient for a number of years.

#### SURVEY WORK.

In connection with the suits for damages for flooding hay lands brought by the farmers owning property around Rice Lake careful surveys have been made of all the hay lands that are affected by high water in the Rice Lake system and maps have been made for record and for use in these suits. Observations have also been made of the elevation of the water in the various lakes during the season and also of the velocity of discharge at the outlet of Baldwin Lake through the flume between Baldwin Lake and the succession of small lakes below. Results seem to show that no damage has been occasioned by the flume, and that, in reality, by pumping from Baldwin Lake, it has been a positive advantage in reducing at times the level of the water below the natural outlet.

#### WATER CONSUMPTION.

A careful record has been kept of the water consumption during the year in each system. The results have been tabulated and are shown in Table No. 1.



A comparison with the table of last year shows that the daily average of 7,322,800 gallons is about one million gallons less than last year. This undoubtedly is due to the fact that the rainfall during the summer months was much larger this year, consequently a much less amount of water was used for lawn and street sprinkling than the previous year, also several large consumers have dropped off, obtaining their supply from artesian wells.

The method of charging the consumer for the actual amount of water used is becoming more and more prevalent in all the large cities and towns, and St. Paul has always been in the front rank in adopting and encouraging this system and in making low rates for actual consumption. We have now in St. Paul 2,298 meters, 752 of which were put in during the past season. For the purpose of getting an approximate estimate of the probable waste of water in our distributive system, a record of 215 metered services in the different residence districts of the high service supply has been tabulated, and the consumption per service per day worked out. A census was also taken of the number of people supplied by these services and from this the consumption per capita per day was obtained, all of which results are shown in the following tables:

## CONSUMPTION OF WATER PER SERVICE.

	Number of Services.	Daily Consumption, Per Service, Gallons.
High service .....	8,327	421.2
West St. Paul high service.....	100	381.5
Low service from Vadnais Lake.....	4,162	906.1
Low service from Phalen Lake.....	973	443.9
Total low service.....	5,235	728.8
Total high and low service.....	13,562	539.9

215 metered services in the high service.

## RESIDENCE DISTRICTS.

	1st and 2nd Wards.	Midway District.	7th and 8th Wards.	Total.
Number of services.....	62	73	80	215
Number of people.....	309	343	436	1,088
Number of people per service....	4.984	4.699	5.45	5.06
Daily consumption per serv., gal.	74.32	97.21	177.89	122.07
Daily consumption per capita, gal.	14.34	23.73	31.90	23.494

The services used were especially selected to be representatives of their districts, and while the number of services in the table is entirely too small to draw any positive conclusion (being only about 2.6 per cent of the whole number of services), yet the results obtained seem to be of sufficient importance to justify the careful tabulation of all the metered services, at least on the high service, for next year, in order that more



reliable information may be obtained. The detailed records from which the table is compiled give sufficient evidence of the promptness with which repairs are made when the water wasted by defective plumbing has to be paid for. As no census of the total number of people supplied has been taken, an accurate comparison of the per capita consumption, as per the table, to the actual per capita consumption for the high service cannot be made, but the average metered consumption per service per day as tabulated is only 29 per cent of the actual total for the high service, and assuming the average number of persons per service as obtained from the table, the tabulated per capita consumption would be 28.5 per cent of the actual.

#### PUMPING PLANTS.

By the completion of the Centerville Lake pumping station there is no necessity to operate the Baldwin Lake plant, but as there is not a large amount of capital invested in this plant, I would recommend that it be kept intact at present as a sort of emergency plant which might be used in case anything should happen to the Centerville Lake plant.

The following compilation of the cost of pumping at the several pumping stations shows an increase of duty over last year, which is accounted for by the greater efficiency of the new boiler at McCarron Lake station, the additional wells at Vadnais Lake, and the greater consumption at the West side station.

#### COST OF PUMPING AT THE VARIOUS PUMPING STATIONS.

##### McCARRON LAKE PUMPING STATION.

	Gallons.		
Capacity of Pump No. 1.....	2,000,000		
Capacity of Pump No. 2.....	4,000,000		
Capacity of Pump No. 3.....	6,000,000		
	Gallons.	Pounds of Coal.	No. of Gallons Per Pound of Coal.
Pumps Nos. 1 and 2.....	124,229,200	256,084	485
Pump No. 3.....	1,156,083,140	1,818,124	635
	<hr/> 1,280,312,340	<hr/> 2,074,208	<hr/> 617

Average duty during the year for Engines Nos. 1 and 2.....	58,998,151
Average duty during the year for Engine No. 3.....	77,332,747
Average duty during the year for the whole plant.....	75,066,147

		Cost of Raising 1,000,000 Gallons One Foot
Salaries for 1897.....	\$3,600.00	\$0.019260
Fuel .....	3,968.92	0.021233
Waste, oil and repairs.....	339.13	0.001814
Total .....	<hr/> \$7,908.05	<hr/> \$0.042307

## WEST ST. PAUL PUMPING STATION.

Amount of water pumped (gallons).....	16,018,200	
Amount of fuel consumed (pounds).....	229,800	
Average rate of pumping in 24 hours (gallons).....	43,886	
Average duty during the year.....	12,135,381	
		Cost of Raising 1,000,000 Gallons One Foot.
Salaries for 1897.....	\$1,320.00	\$0.39428
Fuel for 1897.....	356.32	0.10633
Waste, oil for repairs.....	59.82	0.017867
Total .....	\$1,736.14	\$0.508477

## VADNAIS LAKE PUMPING STATION.

Amount of water pumped (gallons).....	290,299,356
Amount of fuel consumed (pounds).....	195,950
Average duty during the year.....	53,168,060

As the pump does not fill within from eight to fifteen per cent, the actual amount of water pumped has been used in figuring the amount of work on the discharge side, and piston displacement for the work on the suction side in the duty given above.

		Cost of Raising 1,000,000 Gallons One Foot.
Salaries for 1897.....	\$754.00	\$0.06641
Fuel .....	371.11	0.03268
Waste, oil and repairs.....	63.32	0.00558
Total .....	\$1,188.43	\$0.10467

## PRECIPITATION, ST. PAUL, 1897.

The total amount of precipitation at St. Paul for the year ending December 31st was 30.52 inches. The record by months is as follows:

January .....	2.13	July .....	6.35
February .....	1.03	August .....	2.18
March .....	2.95	September .....	1.33
April .....	1.56	October .....	1.87
May .....	1.81	November .....	.93
June .....	8.18	December .....	.20

## FUTURE EXTENSION.

By the erection of the pumping plant at Centerville Lake we are now able to utilize the water from Centerville Lake and Peltier Lake, which receive the drainage area of by far the larger portion of the Rice Lake system, including Hardwood Creek and the outlet of Bald Eagle Lake.

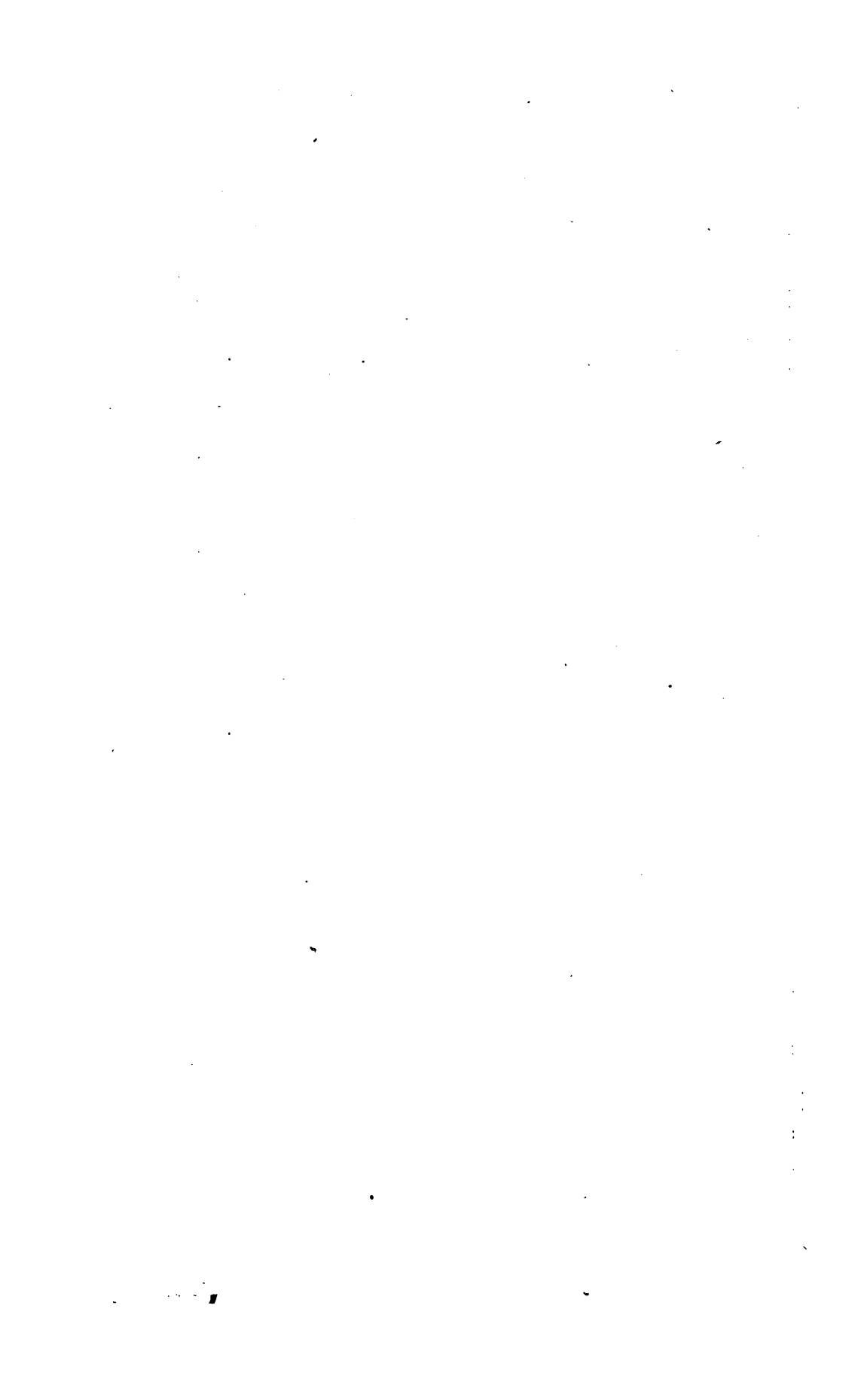
To utilize these two lakes and the drainage area to the best advantage, I would recommend again that plans be prepared to cut off the rest of the Rice Lake system by a dam between Peltier Lake and Rice Lake, and that a dredge be bought and put in operation on Centerville and Peltier lakes to excavate a deep connection between these lakes and to remove all the weeds and vegetable matter around the edges of the lakes and deepen them so as to prevent the growth of vegetation during warm weather. By making yearly appropriations for this work we shall be able to get the lakes in proper condition by the time it becomes necessary to draw largely for our water supply, and after this is done a proper connection can be made with Clear Lake and with Forest Lake so that the overflow from Forest Lake can be brought down into this system, and I would further recommend that steps be taken at once to condemn the land which may be necessary for carrying out these plans. The recent suits brought against the water board show that it will be necessary to go through the form of condemnation, even if the property about the lake should be greatly benefited by the improvement.

#### BALD EAGLE LAKE EXTENSION.

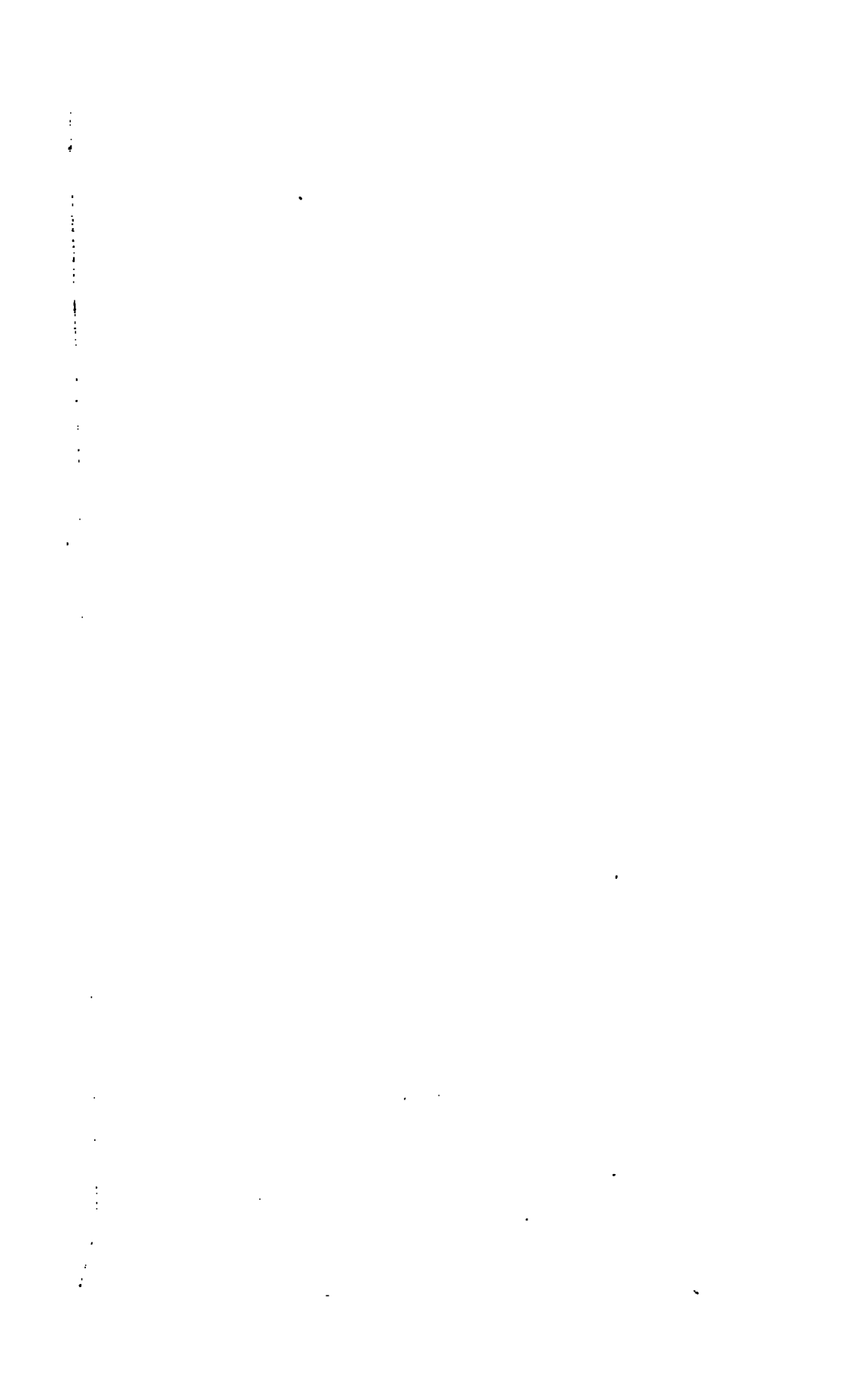
The water in Otter Lake is now under control of the water department and can be turned at any time into the Pleasant Lake system by opening a gate. Bald Eagle Lake is only separated from Otter Lake by about 2,000 feet of low marshy land which can be easily ditched. In fact, there was formerly a connection between these lakes which has grown up with weeds. I would recommend that the proper condemnation be made at once so the control may be obtained of the overflow of Bald Eagle Lake, which now runs into the Rice Lake system. This surplus water could then be turned into Pleasant Lake in the spring when that lake is usually low on account of the draft made on it for the water consumption during the winter. It would not be necessary to draw Bald Eagle Lake below its normal condition, but merely to utilize the surplus overflow which now goes in another direction.

Respectfully submitted,

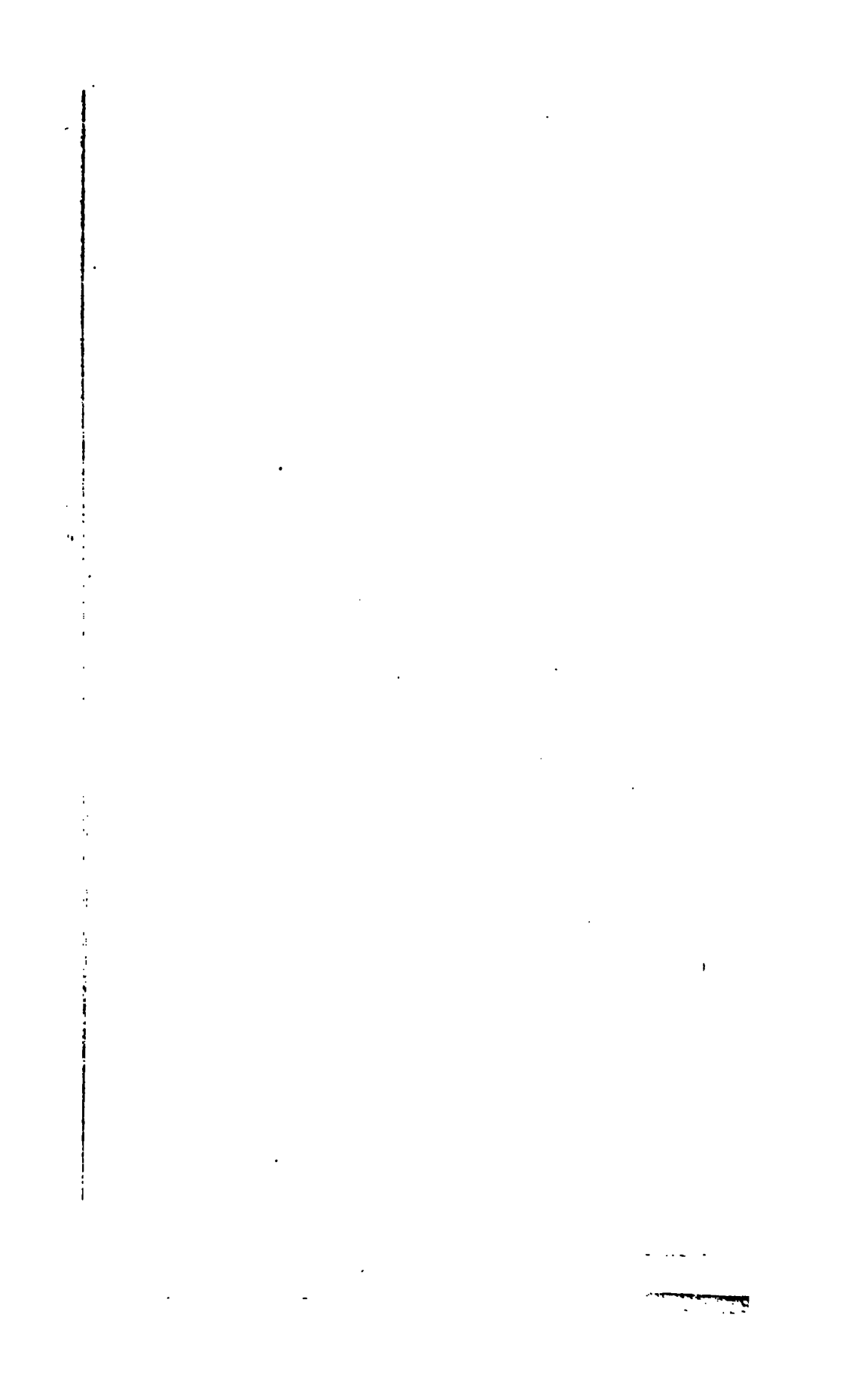
L. W. RUNDLETT,  
*City Engineer.*







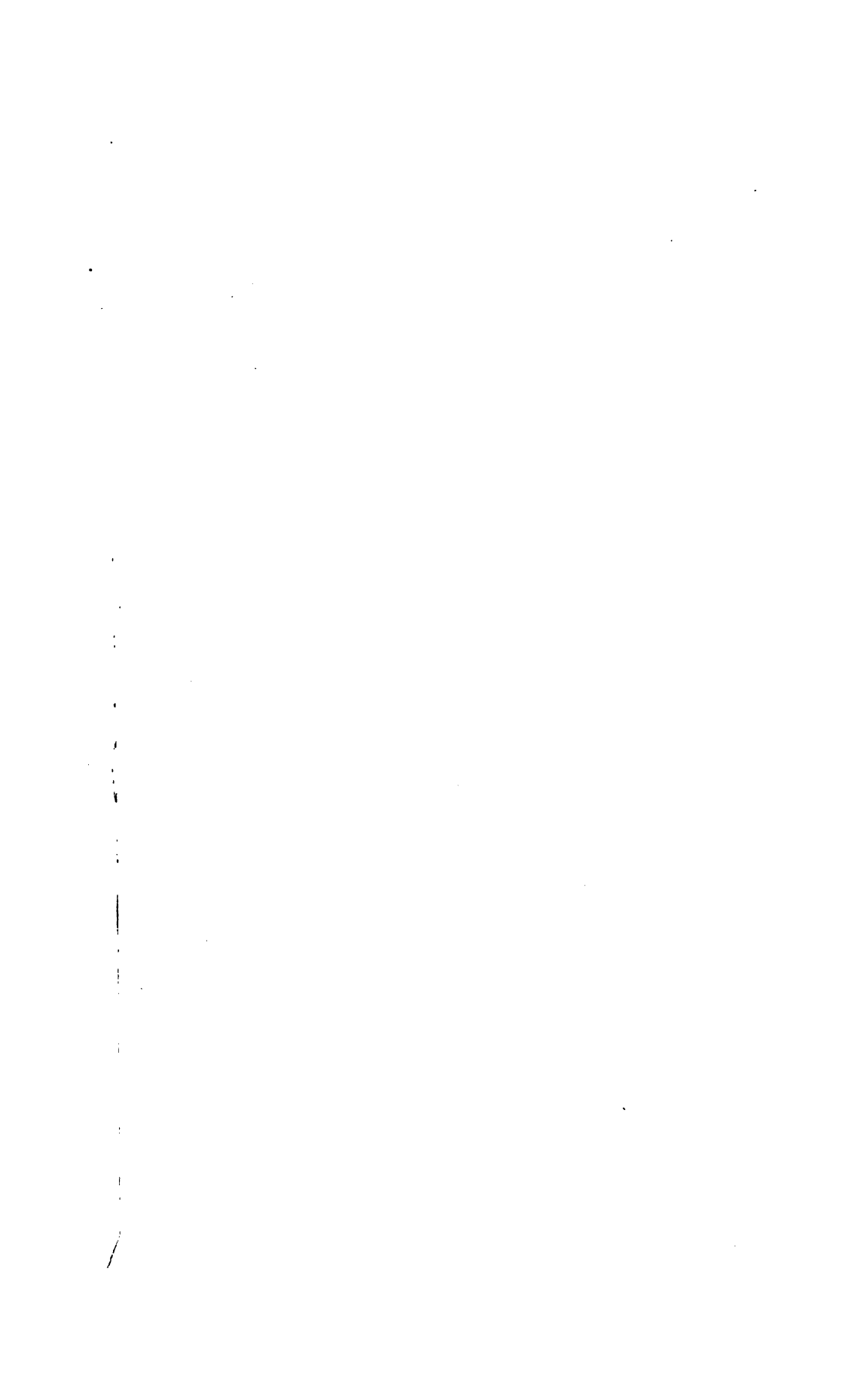




AR 1897.

LOW SERVICE.					
Low Service.		West St. Paul High Service.		Total Low Service.	
	Daily Average.	Total.	Daily Average.	Total.	Daily Average.
27,745	3,917,024	475,920	15,352	121,908,665	3,932,376
23,570	3,815,486	402,660	14,380	107,236,220	3,829,866
11,723	3,852,959	429,490	13,854	119,871,180	3,866,813
1,740	3,796,724	618,660	20,623	114,520,400	3,817,347
7,680	4,562,506	1,979,280	63,847	143,416,960	4,626,353
8,740	4,237,958	1,613,520	53,784	123,752,280	4,291,742
0,753	3,919,380	1,989,500	62,564	123,440,253	3,961,944
1,880	3,332,640	2,063,980	66,257	105,365,860	3,336,897
4,741	3,315,157	2,351,880	78,396	101,806,631	3,338,553
4,113	3,027,552	2,178,180	70,263	96,082,293	3,097,815
0,600	3,584,350	1,251,000	41,700	106,781,600	3,626,050
8,260	3,892,202	724,140	23,359	121,882,400	3,915,561
1,545	3,771,209	16,018,200	43,886	1,392,509,722	3,815,095





# CHIEF ENGINEER'S REPORT.

ST. PAUL, Dec. 31. 1897.

*To the Honorable President and Members of Water Commissioners:*

I respectfully submit to the honorable board my thirteenth annual report of the operation of the four pumping stations for the year 1897.

McCarron lake station has been in continual operation. All the machinery and boilers are in good condition, and have not required any general repairs.

The West Side station has been in continual operation and has not required any repairs.

Vadnais lake station has been in operation seventy-one days.

Centerville lake station was in operation ninety days.

The following tabulated record shows the operation of the different stations:

## McCarron Lake Station—

Total gallons pumped.....	1,280,312,700
Daily average gallons pumped.....	3,507,200
Total pounds of coal used.....	2,089,819
Daily average coal used.....	5,725
Daily decrease since 1896 (gallons).....	663,315

## West Side Station—

Total number of gallons pumped.....	16,018,200
Daily average gallons pumped.....	43,885
Total pounds coal used.....	229,800
Daily average coal used.....	629
Daily increase since 1896.....	10,064

## Vadnais Lake Station—

Total gallons pumped.....	349,800,000
Daily average .....	4,836,159
Total pounds of coal.....	195,950
Daily average coal.....	2,728

## Centerville Lake Station—

Total gallons pumped.....	112,295,278
Total pounds coal used.....	76,125

Respectfully submitted,

M. FEIST,  
Chief Engineer.

## ST. PAUL WATER WORKS PUMPING STATION, MCARRON LAKE.

## ENGINEER'S REPORT FOR YEAR ENDING DECEMBER 30, 1897.

MONTHS—1897.	NUMBER OF HOURS PUMPED.			NUMBER OF REVOLUTIONS.			NUMBER OF GALLONS PUMPED.			Total per Month Pumped. Eng. 1, 2, & 3.	Average per Day Pumped.	Total Coal Used per Month.	Average Coal Used per Day.
	Eng. No. 1.	Eng. No. 2.	Eng. No. 3.	Engine No. 1.	Engine No. 2.	Engine No. 3.	Engine No. 1.	Engine No. 2.	Engine No. 3.				
January.....	78	288	554	582,000	404,600	590,300	6,611,200	30,516,800	57,857,800	97,474,000	3,134,654	190,310	6,429
February.....			586	206,000	590,300	698,700			80,122,900	86,734,100	3,097,646	190,621	5,736
March.....			744		686,700				98,198,100	98,198,100	3,167,089	171,023	5,516
April.....			716		608,100				86,058,300	86,058,300	2,898,000	134,553	4,485
May.....			650		852,800				121,950,400	121,950,400	3,633,883	184,183	5,941
June.....	62	162 1/2	650	133,700	334,000	701,000	4,278,400	22,752,800	100,371,700	127,492,000	4,022,000	200,216	6,713
July.....	7	65	744	18,000	143,100	779,300	585,200	3,730,800	111,408,500	121,794,500	3,828,854	179,668	5,763
August.....			500		845,000				120,835,000	120,835,000	3,897,903	175,463	5,600
September.....	60	105	549	122,200	194,300	843,000	3,910,400	13,212,400	90,647,700	107,770,500	3,502,350	179,668	5,988
October.....		47	672		89,800	743,600		6,103,400	110,032,800	116,139,200	3,747,071	176,341	5,629
November.....		125	554		240,100	548,200		17,414,800	78,292,600	95,707,400	3,193,500	162,876	5,435
December.....		731	683,000			683,000			99,227,700	99,227,700	3,206,803	166,696	5,345
Total.....	216	762 1/2	7,040	481,100	1,600,500	8,064,500	15,385,200	108,834,000	1,156,083,500	1,280,312,700	3,507,200	2,089,819	5,725

Total gallons pumped..... 1,280,312,700  
 Daily average gallons pumped..... 3,507,200  
 Total pounds of coal used..... 2,089,819  
 Daily average coal used..... 5,725  
 Daily decrease since 1896—Gal..... 663,315

MARTIN FEIST.

Chief Engineer.

**ST. PAUL WATER WORKS PUMPING STATION, WEST SIDE.**  
**ENGINEER'S REPORT FOR YEAR ENDING DECEMBER 31, 1897.**

MONTHS.	Number of Hours Pumped.	Number of Revolu- tions.	Total Number of Gallons Pumped.	Daily Average Gallons Pumped.	Total Pounds Coal Used.	Average Coal per Day Used.	Average Pressure.
1897.							
January .....	10.31	26,440	475,920	15,352	19,000	612	91
February .....	9.60	22,370	402,660	14,380	16,150	576	91
March .....	9.41	23,860	429,480	13,854	17,000	548	91
April .....	13.34	34,370	618,660	20,622	14,600	486	91
May .....	42.24	109,960	1,979,280	63,847	21,850	705	91
June .....	35.20	89,640	1,613,520	53,784	18,600	620	91
July .....	41.48	107,750	1,939,500	62,564	20,700	667	91
August .....	43.39	114,110	2,053,980	66,257	21,100	680	91
September .....	50.36	130,690	2,351,880	78,396	22,100	736	91
October .....	47.00	121,010	2,178,180	70,263	22,000	710	91
November .....	26.53	60,500	1,251,000	41,700	18,400	613	91
December .....	15.30	40,230	724,140	23,359	18,300	590	91
Total .....	34.85	889,900	16,018,200	43,885	229,800	629	91

Total number gallons pumped .....	16,018,200
Daily average gallons pumped .....	43,885
Total pounds of coal used .....	229,800
Daily average coal used .....	629
Daily increase since 1896 .....	10,064



## ST. PAUL WATER WORKS PUMPING STATION, VADNAIS LAKE.

ENGINEER'S REPORT FOR YEAR ENDING DECEMBER 31, 1897.

MONTHS.	Number of Hours Pumped.	Number of Revolu- tions.	Number of Gallons Pumped.	Daily Average Gallons Pumped.	Total Coal Used.	Daily Average Coal.	Average on Suction.
1897.							
January .....							
February .....							
March .....							
April .....							
May .....							
June .....							
July .....							
August .....	68	154,400	13,587,200	4,528,066	8,300	2,768	10 1/4
September .....	668	1,556,200	136,945,600	4,890,914	74,500	2,680	10 1/2
October .....	674 1/2	1,548,200	136,241,600	4,885,771	76,500	2,732	10 1/2
November .....	209	716,200	63,025,600	5,058,888	36,650	2,756	10 1/2
December .....							
Total .....	1,710 1/2	3,975,000	349,800,000	4,836,159	196,950	2,728	10 1/4
Total gallons pumped.....					349,800,000		
Daily average gallons pumped.....					4,836,159		
Total pounds of coal used.....					196,950		
Daily average coal used.....					2,728		

**ST. PAUL WATER WORKS PUMPING STATION,  
CENTERVILLE LAKE.**

**ENGINEER'S REPORT FOR YEAR ENDING DECEMBER 31, 1897.**

MONTHS.	Number of Hours Pumped.	Number of Revolu- tions.	Number of Gallons Pumped.	Daily Average Pumped	Total Pounds Coal Used.
1897.					
January .....	38¾	35,900	12,985,800	1,443,977	22,300
February .....					*5,100
March .....					*8,350
April .....					
May .....	5	5,760	2,085,120		1,000
June .....	7¼	9,018	3,264,516	652,915	3,285
July .....	41¼	43,821	15,863,202	1,586,320	8,300
August .....	118¼	187,827	67,993,374	7,570,463	26,390
September .....					
October .....	23¼	22,844	8,269,528		4,700
November .....	5	5,041	1,824,842		†1,200
December .....					
Total .....	239¼	310,211	112,206,382		81,225

\*Coal for heating building.

†Testing well.

Total gallons pumped.....	112,205,278
Total pounds coal used.....	81,225

# CITY TREASURER'S REPORT.

OFFICE OF THE CITY TREASURER,  
ST. PAUL, MINN., Jan. 22, 1898.

*To the Honorable Board of Water Commissioners,*

GENTLEMEN: I herewith submit the annual report of the receipts and disbursements of the water department for the year ending Dec. 31, 1897.

## RECEIPTS.

Balance on hand Jan. 1, 1897.....	\$12,189.92
Cash .....	304,459.11

## DISBURSEMENTS.

Cash .....	\$301,748.55	
Balance on hand Jan. 1, 1898.....	14,900.48	
	<hr/>	<hr/>
	\$316,649.03	\$316,649.03

## WATER DEPARTMENT SINKING FUND.

### Cr.

Balance on hand Jan. 1, 1897.....	\$2,090.71
Cash invested by Water Board.....	75,000.00
Cash for redeemed tax levy certificates of indebtedness .....	303,500.00
Cash interest on bonds.....	2,000.00
Cash interest on certificates of indebtedness.....	19,535.03
General fund interest on \$49,250 to September 1st .....	175.11
General fund error on June 19, 1897.....	11.92
General fund interest on balance October, 1896, to March, 1897 .....	37.11

### Dr.

To investment in registered city bonds.....	\$150,000.00	
To tax levy certificates of indebtedness.....	304,000.00	
To interest on balance overdrawn account.....	824.80	
To balance on hand Jan. 1, 1898.....	7,525.08	
	<hr/>	<hr/>
	\$462,349.88	\$462,349.88

Respectfully submitted,

C. L. HORST,  
City Treasurer.

SEVENTEENTH ANNUAL REPORT

OF THE

BOARD

OF

WATER COMMISSIONERS

OF THE

CITY OF ST. PAUL

JANUARY 1, 1899.

ST. PAUL, MINN.  
THE POWER PRESS COMPANY.  
1899.





**SEVENTEENTH ANNUAL REPORT**

**OF THE**

**BOARD**

**OF**

**WATER COMMISSIONERS**

**OF THE**

**CITY OF ST. PAUL**

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**JANUARY 1, 1899**

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**ST. PAUL, MINN.**  
**THE PIONEER PRESS COMPANY.**  
**1899.**

**OFFICERS**  
**OF THE**  
**CITY WATER WORKS.**

**JANUARY 1, 1899.**

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**BOARD OF WATER COMMISSIONERS.**

**JOHN H. WOLTERSTORFF, President. Term expires Jan. 1, 1901.**  
**R. B. C. BEMENT. Term expires Jan. 1, 1901.**  
**J. F. HOYT. Term expires Jan. 1, 1900.**  
**P. W. HUDNER. Term expires Jan. 1, 1902.**  
**JNO. M. CARLSON. Term expires Jan. 1, 1903.**

— — — — —

**JOHN CAULFIELD, Secretary.**  
**A. R. STARKEY, Superintendent.**  
**L. W. RUNDLETT, City Engineer and Engineer of the Board.**  
**MARTIN FEIST, Chief Engineer and Engineer of McCarron Lake Station.**  
**M. THOMMES, Assistant Engineer of McCarron Lake Station.**  
**FRED KOPHINGST, Assistant Engineer of McCarron Lake Station.**  
**H. GEISLER, Gate Keeper and Engineer of Vadnais Lake Station.**  
**A. A. THOMPSON, Assistant Engineer of Vadnais Lake Station.**  
**JACOB ABRESCH, Engineer of Centerville Station.**  
**JOS. DOERR, Engineer of West St. Paul Station.**  
**R. H. JOHNSTON, Assistant Engineer of West St. Paul Station.**  
**GEO. DOORLEY, Meter Inspector.**

SEVENTEENTH ANNUAL REPORT  
OF THE  
BOARD OF WATER COMMISSIONERS  
OF THE  
CITY OF ST. PAUL, MINN.

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Office of the Board of Water Commissioners,  
St. Paul, Minn., Jan. 1, 1899.

*To the Honorable Mayor and Common Council of the City of St. Paul,*

GENTLEMEN: The Board of Water Commissioners of the City of St. Paul presents herewith its seventeenth annual report, covering the twelve months ending Dec. 31, 1898. During the year a gatehouse was built, in which is placed a weir for the purpose of measuring the outflow of water at Pleasant lake, together with 1,213 feet of brick conduit, four and one-half feet wide by forty-three and one-half inches high, and discharging into an open canal leading to Sucker lake, which finally reaches Vadnais lake. A 36-inch cast iron intake pipe was laid, extending 470 feet into Pleasant lake.

The new 10,000,000-gallon pumping engine at McCarron lake pumping station has been completed during the year, and is now in first-class working order. We now have a daily pumping capacity at McCarron lake pumping station of one pump 4,000,000 gallons daily capacity, one pump 6,000,000 gallons daily capacity and one pump 10,000,000 gallons daily capacity. This will cover all possible requirements for many years to come.

In the report of the city engineer, you will notice that the average rainfall for the year ending Dec. 31, 1898, was 25.34 inches, or 5.18 inches less than the average rainfall of the previous year. By this it will be seen that the average rainfall was very light, and in consequence thereof all the lakes were low, and we thought it advisable to provide for an increased supply of water. We acquired a right of way between Center-



ville and Peltier lakes; dug a canal letting the water down from Peltier and other lakes. With this addition we expect to have an ample supply of good water.

The quality of the water was very satisfactory last year, a fact confirmed by the analyses of the water and the comparatively few complaints from the consumers.

The sinking fund this year has been increased by cash, fifty-one thousand, five hundred dollars (\$51,500), and interest earnings, sixteen thousand, four hundred and ninety-nine dollars and eighty-six cents (\$16,499.86), making a total of five hundred and twenty-nine thousand, five hundred and twenty-four dollars and ninety-four cents (\$29,524.94) in water department sinking fund to date.

During the year there has been expended the sum of eighty-six thousand, fifty-nine dollars and one cent (\$86,059.01) for extensions, machinery, distribution, mains, meters, etc., making the total cost of the works to the city, Jan. 1, 1899, three million, nine hundred thousand, four hundred and thirteen dollars and eighty-eight cents (\$3,900,413.88).

Your attention is again called to the increase in the number of water meters in use. The increase during the previous year was about fifty per cent. In the engineer's report this subject has been investigated, and you will find figures showing the number of gallons used per capita per day for metered as against unmetered consumers.

The average water consumption during the year has been 8,000,000 gallons per day, 677,200 gallons more per day than last year. This is undoubtedly due to the fact that the rainfall during the summer months was much less this year, consequently a much larger amount of water was used for lawn and street sprinkling than the previous year.

The fifty-three suits for damages for flooding hay lands brought by the farmers owning property around Rice lakes in the year 1896, amounting to sixty-seven thousand, six hundred and fifty dollars (\$67,650), we are pleased to state, have been compromised for sixteen hundred dollars (\$1600), and great credit is due the city attorney's office for the able manner in which the suits were conducted and finally compromised for so small an amount.

With this, we submit the annual reports of the secretary, superintendent, city engineer, city treasurer, and chief engineer of the mechanical department for details in their respective departments.

JOHN H. WOLTERSTORFF,  
J. F. HOYT,  
P. W. HUDNER,  
JOHN M. CARLSON,  
R. B. C. BEMENT.

## SECRETARY'S REPORT.

Office of the Board of Water Commissioners,  
St. Paul, Minn., Jan. 1, 1899.

*To the Board of Water Commissioners,*

GENTLEMEN: I herewith submit my seventeenth annual report, with accompanying statements and tables, showing in detail, under appropriate headings, the financial operations of the water department for the year ending Dec. 31, 1898; also, comparative statements of receipts and disbursements from Aug. 10, 1882 (the time of the purchase of the works by the city), to date.

### REVENUE. (See Table No. 2.)

Balance on hand Jan. 1, 1897.....		\$15,104.43
General water receipts.....	\$167,154.27	
Miscellaneous water receipts.....	15,084.87	
Connection (street services).....	10,355.09	
Extensions .....	770.74	
Construction (new supply).....	243.39	
Frontage tax .....	103,927.35	
Shutting off and turning on water.....	46.00	
Sinking fund earnings.....	16,878.94	
Sinking fund .....	379.08	
Meter .....	292.16	
Repair .....	60.70	
		<hr/>
		315,192.59
Total .....		<hr/>
		\$330,297.02

### DISBURSEMENTS. (See Table No. 2.)

General maintenance .....	\$38,124.41	
Construction (street services).....	10,323.24	
Repairs .....	2,273.62	
Meters .....	12,533.49	
Extensions .....	19,128.60	
Construction .....	54,396.92	
Interest .....	114,200.00	
Frontage tax refunded.....	476.44	
Sinking fund .....	68,378.94	
Sinking fund earnings.....	379.08	
		<hr/>
Total .....		<hr/>
		\$320,214.74
Balance .....		<hr/>
		\$10,082.28

The general water receipts, including high and low service and meters, were one hundred and sixty-seven thousand, one hundred and fifty-four dollars and twenty-seven cents (\$167,154.27), a decrease of thirty-six hundred and forty-two dollars and eight cents (\$3642.08), as compared with the receipts of 1897. This is owing to the reduction in water rates which went into effect in 1897, and, as stated in the last annual report, affected meter rates from May 1, 1897, low service July, 1897, and high service Sept. 1, 1897. The decrease in high service has been fifty-three hundred and forty-three dollars and forty-nine cents (\$5343.49), on low service, thirty-three hundred and fifty-two dollars and twenty-one cents (\$3352.21), and an increase from meter consumers of five thousand and fifty-three dollars and seventy-two cents (\$5,053.72). The decrease from high and low service is not entirely due to the reduction of rates referred to above, but to the fact that over one thousand consumers have been transferred to the meter system.

Extension account is credited with seven hundred seventy dollars and seventy-four cents (\$770.74), derived as follows:

For putting in large services for automatic fire extinguishers....	\$411.80
Cast iron water pipe sold.....	32.78
For scrap iron, oil barrels and valves.....	95.36
For labor furnished contractors, in paving streets, relaying street car lines, etc.....	230.80
Total .....	\$770.74

Construction account is credited with two hundred forty-three dollars and thirty-nine cents (\$243.39), of which two hundred twenty-seven dollars and twenty-one cents (\$227.21) was received from the Minneapolis Mill Co. and the St. Anthony Falls Water Power Co. for costs in the suit decided by the supreme court at Washington, in favor of the city; forty-three cents (43c) on account of unclaimed money on pay roll; thirteen dollars and fifty cents (\$13.50) for brick sold, and two dollars and twenty-five cents (\$2.25) from M. Dupre, being his portion of abstract of title for property in Anoka county.

Repair account is credited with sixty dollars and seventy cents (\$60.70), being amount received from the City Railway Company for labor furnished in changing water main on Selby and Summit avenues, on account of constructing the Selby avenue safety device.

#### INTEREST ACCOUNT.

One hundred fourteen thousand, two hundred dollars (\$114,200), being interest on the bonded debt, has been paid from the earnings of the works.

#### REPAIR ACCOUNT.

Twenty-two hundred seventy-three dollars and sixty-two cents (\$2273.62) was paid on this account, of which fourteen hundred seventy



dollars and eighty-five cents (\$1470.85) was on account of fire hydrants, two hundred twenty-two dollars and forty-nine cents (\$222.49) on account of valves, and five hundred eighty dollars and twenty-eight cents (\$580.28) on account of mains.

#### GENERAL MAINTENANCE ACCOUNT.

Thirty-eight thousand one hundred twenty-four dollars, and forty-one cents (\$38,124.41) was paid on this account. The expense of maintaining the five pumping stations and Dale street reservoir was twelve thousand six hundred fifteen dollars and sixty-two cents (\$12,615.62) (see Table No. 13), of which seventy-five hundred sixty-four dollars and sixteen cents (\$7564.16) was for salaries, forty-three hundred ninety-six dollars and forty-six cents (\$4396.46) for fuel, three hundred ninety-nine dollars and forty-three cents (\$399.43) for waste and machine oils, two hundred thirteen dollars and eighty-nine cents (\$213.89) was for supplies and repairs, and forty-one dollars and sixty-eight cents (\$41.68) was for kerosene oil, leaving a balance of twenty-five thousand five hundred and eight dollars and seventy-nine cents (\$25,508.79) for salaries and labor of all the officers, employes, office expenses, fuel, and all other expenses, necessary for maintaining the works. (See Table 17 for comparative statement of the expenses of maintaining the pumping stations and reservoir for the past eight years.)

#### EXTENSION ACCOUNT.

Nineteen thousand one hundred twenty-eight dollars and sixty cents (\$19,128.60) was paid on account of the city extensions, of which seven thousand one hundred forty-six dollars and twenty-one cents (\$7,146.21) was for cast iron pipe and specials, eight thousand sixty-one dollars and ninety-nine cents (\$8,061.99) was for labor, three hundred fifteen dollars (\$315) for fire hydrants, eight hundred seventy-nine dollars and twenty-six cents (\$879.26) for valves, and two thousand seven hundred and twenty-six dollars and fourteen cents (\$2,726.14) for tools, lead, hemp packing, lumber and material.

#### CONSTRUCTION ACCOUNT.

Fifty-four thousand three hundred ninety-six dollars and ninety-two cents (\$54,396.92) was paid on this account, of which twenty-eight thousand five hundred dollars (\$28,500) was on account of the ten-million pump at McCarron lake station, eleven thousand four hundred fifty-seven dollars and eighty cents (\$11,457.80) for improvements at Pleasant lake (including conduit, weir chamber and intake pipe), eleven hundred fifty-one dollars and seventy-five cents (\$1151.75) for thirty-inch Venturi meter, twelve hundred and twenty-three dollars (\$1223) for new boiler, nine hundred forty-five dollars and fifty cents (\$945.50) for special castings, eight hundred dollars (\$800) for inspecting the ten-million-gallon pump during



construction and making final test, fifteen hundred and fifty dollars (\$1550) balance due contractors for Centerville conduit, three hundred and fifty dollars (\$350) balance due on fifteen-million engine at Centerville, nine hundred ninety-five dollars and sixty-six cents (\$995.66) for vestibule for McCarron lake pumping station, three hundred seventy-four dollars and thirty-seven cents (\$374.37) for canal between Centerville and Peltier lakes, five hundred and thirty dollars (\$530) for improvements at Union Park station, ten hundred and thirty-nine dollars and forty-seven cents (\$1039.47) for Wilkinson lake canal, and the balance, amounting to five hundred four hundred seventy-nine dollars and thirty-seven cents (\$5479.37), was paid on account of the Centerville law suits, improvements at McCarron lake pumping station necessitated in installing the new ten-million-gallon engine, and improvements of various kinds at Vadnais lake and Centerville lake stations.

#### PAY ROLL ACCOUNT. (See Table No. 11.)

All the work in the laying of water pipes the past season, except the intake at Pleasant lake and small extensions in the city, was done under contract. The putting in of the service pipes, additional fire hydrants, valves and street sprinkling hydrants was done by day labor; also, considerable work at the various pumping stations, lakes and canals. The pay roll of all officers and employes for the year amounted to forty-nine thousand nine hundred ninety-nine dollars and twenty-three cents (\$49,991.23), and the monthly average number of employes has been 102.

#### SINKING FUND. (See Table No. 10.)

This fund now amounts to five hundred twenty-nine thousand five hundred twenty-four dollars and ninety-four cents (\$529,524.94), an increase of sixty-seven thousand nine hundred ninety-nine dollars and eighty-six cents (\$67,999.86) during the year, of which fifty-one thousand five hundred dollars (\$51,500) was paid from the earnings of the works, and sixteen thousand four hundred ninety-nine dollars and eighty-six cents (\$16,499.86) being the interest earnings on the invested funds. Your attention is respectfully called to Table No. 10 accompanying this report, showing the sinking fund investments, date of investments, date of certificates, when due, etc.

#### CONTRACTS. (See Table No. 6.)

Contracts have been let during the year amounting to thirty-two thousand eight hundred eighty-eight dollars and seven cents (\$32,888.07), on which twenty-seven thousand one hundred and ninety-five dollars and twenty-nine cents (\$27,195.29) has been paid, leaving a balance of fifty-six hundred ninety-two dollars and seventy-eight cents (\$5692.78) to be paid when contracts are completed. On Jan. 1, 1898, date of last annual report, there was due on contracts, not then completed, the sum of forty-one thou-

sand one hundred thirteen dollars and sixty-six cents (\$41,113.66), on which forty thousand nine hundred thirteen dollars and sixty-six cents (\$40,913.66) has been paid, leaving a balance of two hundred dollars (\$200) still due.

#### BONDED DEBT. (See Table No. 7.)

No increase has been made in the bonded debt since May 1, 1890. The present bonded debt is two million four hundred sixty thousand dollars (\$2,460,000), the annual interest of which is one hundred fourteen thousand and two hundred dollars (\$114,200), and is paid from the revenue of the works.

#### FRONTAGE TAX. (See Table No. 9.)

There has been collected during the year by the county treasurer one hundred three thousand nine hundred twenty-seven dollars and thirty-five cents (\$103,927.35) on account of frontage tax. Your attention is called to Table 9, accompanying this report, showing in detail the collections, balances, etc., for the various years this assessment has been made.

Your attention is also called to Table No. 19, showing the number of miles of mains laid annually since Aug. 10, 1882 (when the city purchased the works), the cost of same, expenditures for construction outside of city limits, annual maintenance, number of taps, annual receipts from consumers and the annual increase from same, frontage tax receipts and assessments, the number of miles of mains that will be dropped annually from the frontage tax assessments under the law passed by the legislature in 1895, exempting property in front of which water mains are laid from further assessments after having paid ten years. From this table it appears that property in front of 107 miles of mains is already exempt and that twenty-eight miles additional will be exempt upon the payment of the 1898 tax.

#### METERS.

There are now 3,355 meter accounts, an increase of 1,055 during the year, of which the department owns 3,300 and the consumers 55. Eleven hundred and seventy-four meters were tested during the year, of which 121 were old meters and 1,053 new. Your attention is called to Table No. 20, showing comparative monthly statement for the years 1896, 1897 and 1898 of the number of meters, the number of cubic feet of water consumed, the amount received for same, the amount received for meter rent, and the average rate received per hundred cubic feet. This department has furnished the city engineer data showing the number of cubic feet of water used monthly during the year by 1,197 taps in the residence district supplied by meter, of which 577 were in the Seventh, Eighth and Ninth wards, 332 on Dayton's Bluff and Arlington Hills, and 288 in the Midway districts; also, the census of each tap. The information thus ob-

## 10 ANNUAL REPORT OF WATER COMMISSIONERS

tained and as tabulated is most interesting and valuable to the department.

### SERVICES. (See Table No. 12.)

During the year 530 applications have been made for service connections, of which 401 were on high service and 129 on low service. Total number of applications to date is 15,742, of which 9,230 are on high service and 6,512 on low. There were but 2,012 applications, and all on low service, when the city purchased the works in 1882. Table No. 12 shows the number of applications made for water services annually from 1869 to date.

### PLUMBING AND INSPECTION. (See Table No. 18.)

Forty-seven plumbers were granted licenses during the year, and 1,104 permits were issued to them to do work in connection with the introduction and extension of water services. In addition to the inspection and examination of all the work done by licensed plumbers, there were 612 special inspections, of which 345 were on high service and 267 on low. These inspections were made at the request of consumers for change of rate.

Table No. 18 shows the character and number of hose violations reported to this department during the past season, and also the comparative statement for the years 1894 to 1898, inclusive. This table also shows the number of permits issued annually to plumbers since 1884.

Respectfully submitted,

JNO. CAULFIELD,

*Secretary.*

TABLE NO. 1.

TRIAL BALANCE DEC. 31, 1898.

Account—	Dr.	Cr.
St. Paul water works (original purchase).....	\$510,000.00	
Bond account .....		\$2,460,000.00
General water receipts.....		2,388,642.29
Miscellaneous water receipts.....		282,381.86
Connectibn (services) .....		5,351.04
Extension (pipe lines and works inside of city)	2,001,663.25	
General maintenance .....	471,496.72	
Repair .....	58,373.71	
Meter .....	71,443.37	
Construction (works outside of city).....	1,317,307.26	
Interest .....	1,518,942.61	
General water receipts (hydrant account).....		121,663.19
Sinking fund .....	529,524.94	
Sinking fund earnings .....		84,361.75
Shutting off and turning on water.....		2,282.00
Frontage tax .....		1,144,152.01
Bank of Minnesota.....	250.76	
C. L. Horst, city treasurer.....	9,831.52	
	<hr/>	<hr/>
	\$6,488,834.14	\$6,488,834.14



TABLE NO. 2.

## RECEIPTS AND DISBURSEMENTS FROM JAN. 1, 1898, TO DEC. 31, 1898.

RECEIPTS.		
Balance Jan. 1, 1898.....		\$15,194.43
General water receipts, high service.....	\$40,522.77	
General water receipts, low service.....	39,294.47	
General water receipts, meters.....	67,367.03	
		\$107,154.27
Miscellaneous receipts, builders.....	\$579.18	
Miscellaneous receipts, flushing sewers.....	356.67	
Miscellaneous receipts, filling cisterns.....	321.50	
Miscellaneous receipts, sprinkling streets.....	13,827.52	
		15,084.87
Connections (services).....		10,355.09
Shutting off and turning on water.....		48.00
Extension.....		770.74
Frontage tax.....		103,927.35
Sinking fund earnings.....		16,878.94
Sinking fund.....		379.08
Meter.....		292.16
Repairs.....		60.70
Construction (new supply).....		243.39
		\$15,192.59
Total receipts.....		\$330,297.02
DISBURSEMENTS.		
General Maintenance—		
Salaries.....	\$21,555.12	
Stationery and printing.....	1,820.77	
Miscellaneous.....	1,080.98	
Labor.....	7,069.51	
Material.....	5,750.63	
Stable—feed.....	425.67	
Stable—repairs.....	472.73	
		\$38,124.41
Connections—		
Labor.....	6,214.30	
Pipe.....	2,780.81	
Brass goods and stop boxes.....	1,129.11	
Tools and miscellaneous.....	190.02	
		10,323.24
Repairs—		
Hydrants—labor.....	\$1,401.64	
Hydrants—material.....	60.21	
Valves—labor.....	214.72	
Valves—material.....	7.77	
Mains—labor.....	504.04	
Mains—material.....	70.24	
		2,273.62
Meters—		
Labor and material.....	\$3,640.12	
Freight and meters.....	8,884.37	
		12,523.49
Extensions—		
Pipe and special castings.....	\$7,146.21	
Labor and contracts.....	8,061.99	
Tools and repairs of same.....	106.77	
Advertising.....	8.50	
Fire hydrants.....	315.00	
Valves.....	879.26	
Lead and hemp packing.....	676.17	
Lumber and material.....	923.82	
Miscellaneous.....	1,010.88	
		19,128.00
Construction—New Supply—		
Pipe and special castings.....	\$1,907.48	
Labor and contracts.....	42,008.52	
Tools and repairs of same.....	120.47	
Lumber and material.....	3,069.88	
Freight.....	134.65	
Engineering and right of way.....	4,445.31	
Miscellaneous and building account.....	1,870.61	
		54,396.92
Interest.....		114,200.00
Refunded frontage tax.....		470.44
Sinking fund.....		68,378.94
Sinking fund earnings.....		379.08
Total disbursements.....		\$320,214.74
Balance.....		\$10,082.28

TABLE NO. 3.

## RECEIPTS AND DISBURSEMENTS FROM AUG. 10, 1882, TO DEC. 31, 1898.

## RECEIPTS.

General water receipts, high service.....	\$676,916.36	
General water receipts, low service.....	958,617.30	
General water receipts, meters .....	753,108.63	
	<hr/>	\$2,388,642.29
Miscellaneous receipts, builders .....	\$38,495.29	
Miscellaneous receipts, water carts.....	3,796.13	
Miscellaneous receipts, flushing sewers.....	12,273.06	
Miscellaneous receipts, filling cisterns.....	20,840.09	
Miscellaneous receipts, sprinkling streets...	206,977.29	
	<hr/>	282,381.88
Connections (services).....		311,909.65
Shutting off and turning on water.....		2,282.00
Extension .....		33,733.59
Interest .....		67,964.84
Frontage tax.....		1,147,316.40
Sinking fund earnings.....		92,140.16
Sinking fund.....		7,778.41
Meter .....		437.77
Repairs .....		3,319.85
Construction (new supply).....		5,037.65
Bills payable.....		653,000.00
Bonds .....		2,110,000.00
General water receipts, hydrant account...		121,663.19
Total receipts.....		<hr/> \$7,228,507.73

TABLE NO. 3—Continued.  
DISBURSEMENTS.

<b>General Maintenance—</b>		
Salaries .....	\$250,981.99	
Stationery and printing .....	18,278.18	
Miscellaneous .....	10,315.37	
Labor .....	80,091.38	
Material .....	106,338.44	
Stable—feed .....	6,118.90	
Stable—repairs .....	4,372.46	
		\$471,496.72
<b>Connections—</b>		
Labor .....	\$175,473.08	
Pipe .....	80,632.80	
Brass goods and stop boxes .....	41,067.21	
Tools and miscellaneous .....	8,785.52	
		306,558.61
<b>Repairs—</b>		
Hydrants—labor .....	\$30,183.69	
Hydrants—material .....	1,888.19	
Valves—labor .....	1,045.37	
Valves—material .....	554.79	
Mains—labor .....	16,080.73	
Mains—material .....	2,331.79	
		61,003.56
<b>Meters—</b>		
Labor and material .....	\$22,814.00	
Freight and meters .....	49,296.24	
		71,881.14
<b>Extensions—</b>		
Pipe and special castings .....	\$1,075,032.33	
Labor and contracts .....	640,365.52	
Tools and repairs of same .....	20,164.83	
Advertising .....	300.58	
Fire hydrants .....	98,890.73	
Valves .....	80,600.48	
Lead and hemp packing .....	68,320.40	
Lumber and material .....	24,449.25	
Miscellaneous .....	26,372.72	
		2,035,396.84
<b>Construction—New Supply—</b>		
Pipe and special castings .....	\$180,706.81	
Labor and contracts .....	719,916.20	
Tools and repairs of same .....	7,406.46	
Lumber and material .....	96,719.06	
Freight .....	19,718.38	
Engineering and right of way .....	131,186.97	
Miscellaneous and building account .....	21,017.10	
Reservoirs .....	147,484.77	
		1,323,244.91
Interest .....		1,580,907.45
Refunded frontage tax .....		3,164.48
Bills payable .....		653,000.00
Sinking fund .....		537,203.35
Sinking fund earnings .....		7,778.41
Bond .....		100,000.00
Total disbursements .....		7,218,42
Balance .....		\$10.08

ER 31, 1898.

lon. dy.)	Bills Payable.	Bond
.21		
.43		
.50		
.25		
.39		

1, 1898.

.....	\$17,000.00	.....
.15	111,000.00	\$150,000
.18	165,000.00	600,000
.90	50,000.00	400,000
.90	55,000.00	.....
.50	95,000.00	200,000
.29	.....	800,000
.91	.....	830,000
.....	105,000.00	100,000
.50	20,000.00	.....
.00	35,000.00	.....
.73		
.70		
.50		
.00		
.39		
.65	\$653,000.00	\$2,110,000







1. The first part of the document is a list of names and dates, which appears to be a record of some kind. The names are written in a cursive script, and the dates are in a more formal, printed style. The list is organized into two columns, with names on the left and dates on the right. The names are: John Smith, James Brown, and William Jones. The dates are: 1810, 1811, and 1812. The list is followed by a signature, which appears to be "John Smith".

TABLE NO. 4.

STATEMENT SHOWING AMOUNT PAID THE CITY TREASURER FROM  
JAN. 1, 1898, TO DEC. 31, 1898.

January 1.	Balance in treasury as per last report.....		\$14,822.33
January.	Cash.....	\$24,082.86	
February.	Cash.....	13,399.94	
March.	Cash.....	45,395.97	
April.	Cash.....	10,448.98	
May.	Cash.....	8,590.83	
June.	Cash.....	37,783.35	
July.	Cash.....	22,796.03	
August.	Cash.....	59,648.07	
September.	Cash.....	30,006.38	
October.	Cash.....	12,524.22	
November.	Cash.....	15,133.96	
December.	Cash.....	18,155.30	
			<hr/> \$297,965.91
	Total .....		\$312,788.24



TABLE NO. 5.

WARRANTS DRAWN ON CITY TREASURER FROM JAN. 1, 1898,  
TO DEC. 31, 1898, INCLUSIVE.

1898.

Jan. 1.	Warrant Nos. 9269 and 9270.....	\$9,112.90	
Jan. 8.	Warrant Nos. 9271 to 9320 inclusive..	3,689.27	
			\$12,802.17
Feb. 1.	Warrant Nos. 9321 to 9334 inclusive..	\$7,068.13	
Feb. 11.	Warrant Nos. 9335 to 9377 inclusive..	7,763.50	
			15,431.63
Mar. 1.	Warrant Nos. 9378 to 9390 inclusive..	\$3,571.21	
Mar. 12.	Warrant Nos. 9391 to 9431 inclusive..	27,018.84	
Mar. 25.	Warrant Nos. 9432 to 9435 inclusive..	12,153.93	
			42,743.98
April 1.	Warrant Nos. 9436 to 9448 inclusive..	\$6,420.32	
April 7.	Warrant Nos. 9449 to 9497 inclusive..	11,981.47	
April 22.	Warrant Nos. 9498 to 9504 inclusive..	2,055.24	
			20,457.03
May 2.	Warrant No. 9505 .....	\$3,588.10	
May 10.	Warrant Nos. 9506 to 9555 inclusive..	7,913.98	
May 19.	Warrant Nos. 9556 to 9567 inclusive..	7,021.96	
			18,524.04
June 1.	Warrant Nos. 9568 to 9588 inclusive..	\$5,439.68	
June 6.	Warrant Nos. 9589 to 9640 inclusive..	28,997.55	
June 23.	Warrant No. 9641 .....	5,850.00	
			40,287.23
July 1.	Warrant Nos. 9642 to 9653 inclusive..	\$5,701.95	
July 8.	Warrant Nos. 9656 to 9706 inclusive..	5,334.42	
July 12.	Warrant No. 9707 .....	3,750.00	
			14,736.37
Aug. 1.	Warrant No. 9708 .....	\$5,059.91	
Aug. 6.	Warrant Nos. 9709 to 9806 inclusive..	39,965.55	
Aug. 20.	Warrant Nos. 9806 to 9818 inclusive..	533.87	
			45,559.33
Sept. 1.	Warrant No. 9819 .....	\$5,158.38	
Sept. 10.	Warrant Nos. 9820 to 9874 inclusive..	27,407.59	
			32,625.97
Oct. 1.	Warrant No. 9875 .....	\$4,972.22	
Oct. 7.	Warrant Nos. 9876 to 9940 inclusive..	13,508.53	
Oct. 16.	Warrant No. 9941 .....	97.41	
			18,638.16
Nov. 1.	Warrant Nos. 9942 to 9962 inclusive..	\$10,288.64	
Nov. 1.	Warrant No. 9963 .....	4,434.28	
Nov. 10.	Warrant Nos. 9964 to 10011 inclusive..	2,497.70	
Nov. 18.	Warrant Nos. 10013 to 10020 inclusive..	814.15	
Nov. 19.	Warrant No. 10012 .....	100.00	
			18,134.77
Dec. 1.	.....	\$4,204.07	
Dec. 2.	.....	1,163.48	
Dec. 3.	.....	6,500.00	
Dec. 8.	.....	10,908.49	
Dec. 10.	.....	100.00	
			22,906.04
Grand total.....			302,956.72
Balance .....			\$9,831.52

TABLE NO. 6.

**CONTRACTS MADE BY THE BOARD OF WATER COMMISSIONERS FROM  
JAN. 1, 1898, TO DEC. 1, 1898.**

No.	Date.	With Whom and for What Purpose.	Amount of Contract.	Amount Paid.	Amount Due.
1.	Jan. 15.	Pioneer Press Co., printing annual report for 1897.....	\$296.58	\$296.58	
2.	Jan. 31.	Northwestern Telephone Exchange Co., telephone.....	58.50		58.50
3.	Feb. 1.	Pittsburg Meter Co., water meters....	6,192.00	6,192.00	
4.	Mar. 28.	The Western Supply Co., brass goods....	337.73	337.73	
5.	Mar. 28.	The Western Supply Co., lead pipe and block tin .....	1,754.68	1,754.68	
6.	Mar. 28.	South Park Foundry & Machine Co., special castings.....	491.70	491.70	
7.	Mar. 28.	South Park Foundry & Machine Co., street sprinkling hydrants and man-hole covers.....	39.00	39.00	
8.	May 11.	Howard-Harrison Iron Co., Bessemer, Ala., 6-inch to 16-inch cast iron pipe .....	4,442.86	4,442.86	
9.	May 11.	Ohio Pipe Co., Columbus, O., 30-inch and 36-inch cast iron pipe.....	2,891.47	2,891.47	
10.	May 11.	South Park Foundry & Machine Co., fire hydrants .....	315.00	315.00	
11.	May 11.	P. H. Thornton, laying water pipe. .	4,577.09	3,790.00	787.09
12.	May 12.	Western Supply Co., pig lead.....	603.45	603.45	
13.	May 13.	St. Paul Cartage Co., drayage.....	425.26	425.26	
14.	May 13.	South Park Foundry & Machine Co., water gates .....	796.50	796.50	
15.	May 27.	Jno. J. Bailey, plumbing at Union Park station .....	121.00	121.00	
16.	June 8.	John Martin Lumber Co., lumber for Pleasant lake conduit.....	602.07	602.07	
17.	June 8.	C. H. Kline, brick for Pleasant lake conduit .....	1,005.26	1,005.26	
18.	June 8.	N. W. Lime Co., Portland cement for Pleasant lake conduit.....	184.98	184.98	
19.	June 8.	D. L. Bell, American cement for Pleasant lake conduit.....	706.42	706.42	
20.	June 8.	Gribben Lumber Co., lumber for Pleasant lake conduit.....	322.52	322.52	
21.	July 1.	Martinson & Sundberg, laying brick and conduit, Pleasant lake conduit....	359.38	359.38	
22.	July 13.	Thos. Brennan Lumber Co., lumber for Wilkinson lake flume.....	700.47	700.47	
23.	Sept. 22.	Thos. Brennan Lumber Co., lumber for Pleasant lake gate-house.....	159.69	159.69	
24.	Sept. 27.	Crane-Ordway Co., lead pipe and block tin .....	630.45	630.45	
25.	Oct. 31.	Chas. Nitz Wood & Coal Co., coal and wood .....	5,074.00	224.72	4,849.28
26.	Oct. 24.	Gribben Lumber Co., lumber for intake, Pleasant lake.....	202.01	202.01	
			<b>\$32,888.07</b>	<b>\$27,105.20</b>	<b>\$5,692.78</b>

TABLE NO. 6—Continued.

CONTRACTS MADE PREVIOUS TO DEC. 31, 1897, AND FOR WHICH  
FINAL SETTLEMENT WAS NOT MADE AT TIME OF LAST REPORT.

Date of Contract.	With Whom and for What Purpose.	Amount Due Dec. 31, 1897.	Amount Paid.	Amount Due.
1896.				
April 29.....	E. P. Allis Co., Milwaukee, Wis., pumping engine, Centerville.....	\$350.00	\$350.00	
May 29.....	Hennessy & Cox, wooden conduit to Centerville .....	1,500.00	1,500.00	
July 8.....	Hennessy & Cox, pump house, Centerville .....	50.00	50.00	
1897.				
May 5.....	E. P. Allis Co., Milwaukee, Wis., 10-million engine, McCarron Lake station .....	28,700.00	28,500.00	\$200.00
May 22.....	Fairbanks, Morse & Co., laying water main on Smith avenue.....	65.10	65.10	
May 22.....	Fairbanks, Morse & Co., laying and re-laying water pipes.....	482.00	482.00	
May 22.....	P. H. Thornton, laying water main.....	42.27	42.27	
June 3.....	James Shiely, drayage.....	56.54	56.54	
Mar. 26.....	Pittsburg Meter Co., water meters.....	476.00	476.00	
May 27.....	Robert W. Hunt & Co., Chicago, inspecting 10-million pump, McCarron Lake station .....	800.00	800.00	
July 1.....	N. W. Fuel Co., coal and wood.....	4,386.28	4,386.28	
Aug. 25.....	Builders' Iron Foundry, Providence, R. I., 30-inch Venturi meter.....	1,151.75	1,151.75	
Oct. 23.....	John Kenny, boiler for McCarron Lake station .....	1,223.00	1,223.00	
Oct. 25.....	Howard-Harrison Iron Co., Bessemer, Ala., cast iron specials.....	945.50	945.50	
Dec. 2.....	J. F. Moulton, Minneapolis, Minn., 25,000 paving brick.....	350.00	350.00	
Dec. 6.....	Minneapolis & Kettle River Sandstone Co., stone for 10-million gallon pumping engine .....	554.56	554.56	
		<u>\$41,113.06</u>	<u>\$40,913.06</u>	<u>\$200.00</u>

TABLE NO. 7.

BOND ACCOUNT JANUARY 1, 1890.

Date of Legislative Act Author- izing Issue of Bonds.	Amount of Bonds Author- ized.	Date of Bonds Issued.	When Due.	Amount of Bonds Issued.	Rate.	INTEREST PAYABLE.										Total Annual Interest		
						Dec. 1.	Jan. 2.	Feb. 1.	Mar. 2.	April 1.	May 2.	June 1.	July 2.	Aug. 1.	Sept. 1.		Oct. 1.	Nov. 2.
Feb. 10, 1881	\$300,000	June 1, 1882	30 years	\$350,000	4 per cent	\$7,000						\$7,000						\$14,000
Jan. 26, 1883	500,000	Aug. 1, 1883	30 years	150,000	5 per cent			\$3,750						\$3,750				7,500
Feb. 21, 1885	800,000	April 1, 1884	(25 30) years	600,000	5 per cent					\$15,000						\$15,000		30,000
Jan. 31, 1887	200,000	April 1, 1885	30 years	400,000	5 per cent					10,000						10,000		20,000
Jan. 31, 1887	100,000	May 2, 1887	20 years	200,000	4½ per cent						\$4,500						\$4,500	9,000
Mar. 29, 1889	300,000	Mar. 1, 1888	30 years	300,000	4½ per cent				\$6,750						\$6,750			13,500
		Jan. 1, 1880	30 years	100,000	4½ per cent	\$2,250							\$2,250					4,500
		Jan. 2, 1889	30 years	100,000	4½ per cent		3,000						3,000					7,200
		May 1, 1880	30 years	100,000	4½ per cent						2,250						2,250	4,500
		May 1, 1890	30 years	100,000	4 per cent						2,000						2,000	4,000
	2,500,000			\$2,400,000		\$7,000	\$5,850	\$3,750	\$6,750	\$25,000	\$8,750	\$7,000	\$5,850	\$3,750	\$6,750	\$25,000	\$8,750	\$114,200



TABLE NO. 8.

## STATEMENT SHOWING AMOUNT DUE THE BOARD OF WATER COMMISSIONERS ON DEC. 31, 1898, FROM CITY OF ST. PAUL.

Water for fire purposes from Dec. 1, 1891, to June 1, 1892.....	\$28,401.53	
Water for fire purposes from June 1, 1892, to Dec. 1, 1892.....	20,229.79	
Water for fire purposes from Dec. 1, 1892, to June 1, 1893.....	30,546.89	
Water for fire purposes from June 1, 1893, to Dec. 1, 1893.....	31,007.77	
Water for fire purposes from Dec. 1, 1893, to June 1, 1894.....	31,773.12	
Water for fire purposes from June 1, 1894, to Dec. 1, 1894.....	32,307.00	
Water for fire purposes from Dec. 1, 1894, to June 1, 1895.....	32,700.16	
Water for fire purposes from June 1, 1895, to Dec. 1, 1895.....	33,204.05	
Water for fire purposes from Dec. 1, 1895, to June 1, 1896.....	33,341.84	
Water for fire purposes from June 1, 1896, to Dec. 1, 1896.....	33,509.57	
Water for fire purposes from Dec. 1, 1896, to June 1, 1897.....	33,063.27	
Water for fire purposes from June 1, 1897, to Dec. 1, 1897.....	33,823.91	
Water for fire purposes from Dec. 1, 1897, to June 1, 1898.....	33,978.33	
Water for fire purposes from June 1, 1898, to Dec. 1, 1898.....	34,184.94	
	<hr/>	\$452,273.07
Premiums received and retained by city on the \$100,000 of bonds issued in January, 1889, to redeem the bonds of the old St. Paul Water Company of like amount assumed by the city at the time of the purchase of the works.....		5,393.77
Relaying of water mains caused by change of grade—		
On Mt. Airy between Vally and Warren.....	\$248.12	
On Fairview between Jackson and Mt. Airy...	134.25	
On East Sixth between Maria and Hoffman...	399.75	
On East Sixth between Broadway and Olive...	674.37	
On Flandrau at Harvester .....	65.00	
Changing main at Como bridge.....	700.58	
Lowering main on Grand avenue.....	94.00	
	<hr/>	2,376.07
For water for flushing sewers and washing asphalt paved streets in 1898.....		1,057.00
For water for park fountains, season 1898.....	\$895.00	
For water for drinking fountains, season 1898..	676.00	
	<hr/>	1,571.00
		<hr/>
From Board of Education—		\$462,070.91
Schools from May 1, 1898, to Jan. 1, 1899.....	1,801.91	
Repairing water mains broken by sewer contractors (claims filed with city comptroller)..	316.29	
Balance frontage tax assessment for 1894 and prior .....		2,118.20
Balance frontage tax assessment for 1895.....	\$12,701.91	
Balance frontage tax assessment for 1896.....	7,484.67	
Balance frontage tax assessment for 1896.....	10,305.75	
Balance frontage tax assessment for 1897.....	25,000.46	
For frontage tax assessment for 1898.....	93,075.68	
	<hr/>	148,817.47
From builders.....	\$50.00	
From service connections.....	148.86	
Street sprinkling, 1896.....	174.47	
Street sprinkling, 1897.....	1,781.40	
Street sprinkling, 1898.....	13,023.87	
	<hr/>	15,783.60
Total .....		<hr/>
		\$629,390.18

TABLE NO. 9.

## FRONTAGE TAX ACCOUNT COLLECTIONS—BALANCE DUE JAN. 1, 1899.

Receipts for Years.	1894 and Prior.	1895.	1896	1897.	1898.	Total.
March 12, 1898.....	\$28.99	\$1,786.04	\$7,657.29	\$2,902.99	.....	\$12,375.91
June 8, 1898.....	.....	.....	.....	25,000.00	.....	25,000.00
August 1, 1898.....	595.95	804.74	7,901.97	35,136.73	.....	44,529.39
August 4, 1898.....	.....	.....	.....	1,950.00	.....	1,950.00
October 5, 1898.....	.....	.....	.....	3,750.00	.....	3,750.00
November 21, 1898.....	.....	.....	.....	7,000.00	.....	7,000.00
December 7, 1898.....	304.94	1,582.02	4,161.09	3,213.40	.....	9,322.05
Total receipts.....	989.88	4,263.40	19,720.35	\$78,953.12	.....	\$103,927.35
Amount due Jan. 1, 1898, as per last report.....	13,751.79	11,748.07	30,116.70	104,052.58	.....	159,669.14
Amount of 1898 assess- ment collectible in 1899..	.....	.....	.....	.....	\$93,075.68	\$93,075.68
Amount due Jan. 1, '99.	\$12,761.91	\$7,484.67	\$10,396.75	\$25,000.40	\$93,075.68	\$148,817.47



TABLE NO. 11.

PAY ROLL FOR YEAR INCLUDES SALARIES OF OFFICERS, ENGINEERS, FIREMEN, INSPECTORS AND LABORERS.			SALARIES OF ENGINEERS, FIREMEN AND KEEPERS AT THE VARIOUS STATIONS.						
MONTH.	No. of Men.	Total Amount of Pay Roll.	McCarron Lake Station.	Vadnais Lake Station.	Baldwin Lake Station.	West St. Paul Station.	Centerville Station.	Reservoir.	Total.
December, 1897.....	77	\$3,262.00	\$300.00	\$50.00	\$6.66	\$110.00	\$60.00	\$25.00	\$551.66
January, 1898.....	71	3,162.65	285.00	50.00	10.00	110.00	50.00	40.00	555.00
February, 1898.....	67	3,042.57	285.00	50.00	10.00	110.00	50.00	40.00	555.06
March, 1898.....	88	3,661.85	285.00	50.00	10.00	110.00	50.00	40.00	555.00
April, 1898.....	77	3,588.10	265.00	50.00	10.00	110.00	50.00	40.00	555.00
May, 1898.....	128	4,512.85	265.00	96.00	10.00	110.00	50.00	40.00	601.00
June, 1898.....	118	4,851.45	300.00	110.00	10.00	110.00	50.00	40.00	620.00
July, 1898.....	132	5,069.91	305.00	110.00	10.00	110.00	50.00	40.00	625.00
August, 1898.....	141	5,158.38	324.50	110.00	10.00	110.00	50.00	40.00	644.50
September, 1898.....	119	4,972.22	350.00	110.00	10.00	110.00	112.00	40.00	732.00
October, 1898.....	101	4,434.28	350.00	110.00	10.00	110.00	165.00	40.00	785.00
November, 1898.....	108	4,294.07	350.00	110.00	10.00	110.00	165.00	40.00	785.00
Totals .....	1,227	49,991.23	3,754.50	1,006.00	116.66	1320.00	902.00	465.00	7,594.16

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TABLE NO. 12.

THE FOLLOWING TABLE SHOWS THE NUMBER OF APPLICATIONS MADE FOR WATER SERVICE ANNUALLY FROM 1869 TO DATE.

YEAR.	High Service.	Low Service.	Total.
1869		34	
1870		321	
1871		250	
1872		164	
1873		131	
1874		153	
1875		95	
1876		85	
1877		67	
1878		50	
1879		180	
1880		167	
1881		164	
1882		264	
1883		361	
1884			2,426
1885	164	336	500
1886	644	366	1,000
1886	639	369	1,008
1887	747	325	1,072
1888	812	406	1,218
1889	1,327	491	1,818
1890	1,071	336	1,407
1891	811	264	1,075
1892	671	210	881
1893	474	151	625
1894	363	139	502
1895	390	311	701
1896	384	150	534
1897	332	98	430
1898	401	129	530
Totals	9,230	6,512	15,742

TABLE NO. 13.

PUMPING PLANTS—EXPENSE MAINTAINING THE FIVE (5) PUMPING STATIONS AND RESERVOIR.

STATION.	Salaries.	Fuel.	Waste and Mech. Oil.	Supplies and Repairs	Kerosene Oil.	Total.
McCarron Lake	\$3,754.50	\$2,923.00	\$293.34	\$83.14	\$4.72	\$7,058.70
Baldwin Lake	116.66	56.00				172.66
Vadnais Lake	1,006.00	1,049.49	65.82	73.81	18.55	2,213.67
West St. Paul	1,320.00	355.97	1.69	40.76	9.00	1,727.42
Centerville	902.00	12.00	38.58	16.18	9.41	978.17
Reservoir	465.00					465.00
Totals	\$7,564.16	\$4,396.46	\$399.43	\$213.89	\$41.68	\$12,615.62



TABLE NO. 14.

## METERS IN SERVICE JAN. 1, 1899.

KIND OF METER.	Size—	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	3	4	Total.
Worthington (improved).....			105	116	32	43	8	4	2	310
Worthington (old style).....			8	16	9	9	2			44
Union (retary).....			75	23	10	8	1		3	120
Union (piston).....			1	1						2
Columbia.....			5							5
Nash.....			12	2						14
Nash "A".....			13	1						14
Nash "A A".....			59							59
Crown.....			72	18	29	35	10	1	2	167
Crown "A A".....			534		14	3				551
Empire.....		14	19	47	34		8		1	123
Empire "A".....			6	4	2					12
Empire "A A".....				1						1
Gem.....								1	1	2
Thomson.....			16	5	2					23
Thomson "B".....		1	50	13	4	2	2			72
Lambert.....			3	1						4
Lambert "A".....			1	1						2
Hersey.....			29	38	29	24	13	2		135
Hersey Disc.....			3			2	1			6
Frost.....				1						1
Trident.....			55	1	1					57
Westinghouse.....			4		4	1	1			10
Pittsburg Disc.....			1,484	22	20	11	3			1,540
<b>Totals</b> .....		<b>15</b>	<b>2,554</b>	<b>311</b>	<b>190</b>	<b>138</b>	<b>49</b>	<b>8</b>	<b>9</b>	<b>3,274</b>

TABLE NO. 15.

## SHUT OFF AND TURNING ON WATER FROM JAN. 1, 1898, TO JAN. 1, 1899.

	High Service.	Low Service.	Total.
Shut off for repairs.....	222	286	508
Shut off for non-payment.....	180	161	341
Shut off for vacant premises.....	520	398	927
Shut off for violation of rules.....		4	4
<b>Totals</b> .....	<b>931</b>	<b>849</b>	<b>1,780</b>
Turned on old services.....	1,010	853	1,863
Turned on new services.....	368	127	495
Turned on for builders.....		32	32
<b>Totals</b> .....	<b>1,378</b>	<b>1,012</b>	<b>2,390</b>

## Total services shut off and turned on for year ending:

December 1, 1884.....	1,014	December 1, 1892.....	4,470
December 1, 1885.....	2,311	December 1, 1893.....	4,477
December 1, 1886.....	2,384	December 1, 1894.....	4,932
December 1, 1887.....	2,541	December 1, 1895.....	4,696
December 1, 1888.....	2,833	December 31, 1896.....	4,373
December 1, 1889.....	3,978	December 31, 1897.....	4,435
December 1, 1890.....	3,919	December 31, 1898.....	4,170
December 1, 1891.....	4,743		

TABLE NO. 16.

SHOWING THE DIFFERENT KINDS AND SIZES OF METERS BELONGING TO THE CITY AND PRIVATE PARTIES, IN SERVICE AND ON HAND, DEC. 31, 1898.

KIND OF METERS.	Size in inches.	PROPERTY OF CITY.			PRIVATE PROPERTY.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of all Meters.
		In Ser. vice.	At Work Shop.	Total.	In Ser. vice.	At Work Shop.	Total.			
Worthington improved.	4				12		2	2		12
Worthington improved.	3				4		4	4		4
Worthington improved.	3	3		3	5		5	8		8
Worthington improved.	1½	38		38	5		5	43		43
Worthington improved.	1	30	2	32	2		2	32	2	34
Worthington improved.	¾	112	2	115	3		3	118	2	118
Worthington improved.	¾	85	7	92	20		20	106	7	112
Worthington old style.	3		3	3					3	3
Worthington old style.	2	2		2				2		2
Worthington old style.	1½	9		9				9		9
Worthington old style.	1	9	3	12				9	3	12
Worthington old style.	¾	16		16				16		16
Worthington old style.	¾	8		8				8		8
Union rotary.	4	3		3				3		3
Union rotary.	3		1	1					1	1
Union rotary.	2	1		1				1		1
Union rotary.	1½	7		7				8		8
Union rotary.	1	10	2	12			1	10	2	12
Union rotary.	¾	23		23				23		23
Union rotary.	¾	75	5	80				75	5	80
Union piston.	1	1		1				1		1
Union piston.	¾	1		1				1		1
Columbia.	¾	5	1	6				5	1	6
Nash.	1						1		1	1
Nash.	¾	2		2						2
Nash.	¾	11		11	1		1	12		12
Nash "A".	1							1		1
Nash "A".	¾	12	2	14	1		1	13	2	15
Nash "AA".	¾	59	1	60				59	1	60
Crown.	4	1		1	1		1	2		2
Crown.	3	1		1				1		1
Crown.	2	9		9	1		1	10		10
Crown.	1½	35		35				35		35
Crown.	1	29	2	31				29	2	31
Crown.	¾	18		18				18		18
Crown.	¾	70	1	71	2		2	72	1	73
Crown.	¾		1	1					1	1
Crown "AA".	1½	3		3				3		3
Crown "AA".	1	14	1	15				14	1	15
Crown "AA".	¾	534	17	551				534	17	551
Empire.	4	1		1				1		1
Empire.	2	8	2	10				8	2	10
Empire.	1	34	1	35				34	1	35
Empire.	¾	47	2	49				47	2	49
Empire.	¾	19	2	21				19	2	21
Empire.	½	14		14				14		14
Empire "A".	1	2	1	3				2	1	3
Empire "A".	¾	4		4				4		4
Empire "A".	¾	6		6				6		6
Empire "AA".	¾	1		1				1		1
Empire "AA".	¾		1	1					1	1
Gem.	4				1		1	1		1
Gem.	3	1		1		1	1	1	1	2
Thomson.	1	2		2				2		2
Thomson.	¾	5		5				5		5
Thomson.	¾	16		16				16		16
Thomson "B".	2	1		1	1		1	2		2
Thomson "B".	1½	2		2				2		2
Thomson "B".	1	5		5				5		5
Thomson "B".	¾	13		13				13		13
Thomson "B".	¾	49	2	51				49	2	51

TABLE NO. 16—Continued.

KIND OF METERS.	Size in Inches.	PROPERTY OF CITY.			PRIVATE PROPERTY.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of all Meters.
		In Ser-vice.	At Work Shop.	Total.	In Ser-vice.	At Work Shop.	Total.			
Thomson "B".....	1/2	1		1				1		1
Lambert.....	1	1		1				1		1
Lambert.....	3/4	3		3				3		3
Lambert "A".....	1	1		1				1		1
Lambert "A".....	3/4	1		1				1		1
Hersey.....	3	2		2				2		2
Hersey.....	2	13	1	14				13	1	14
Hersey.....	1 1/2	24		24				24		24
Hersey.....	1	29	1	30				29	1	30
Hersey.....	3/4	38	3	41				38	3	41
Hersey.....	3/4	29	1	30				29	1	30
Hersey disc.....	2	1		1				1		1
Hersey disc.....	1 1/2	2		2				2		2
Hersey disc.....	3/4	3		3				3		3
Frost.....	1	1		1				1		1
Sport.....	3/4		1	1					1	1
Trident.....	1	1		1				1		1
Trident.....	3/4	1		1				1		1
Trident.....	3/4	55	5	60				55	5	60
Westinghouse.....	2	1		1				1		1
Westinghouse.....	1 1/2	1		1				1		1
Westinghouse.....	1	4	1	5				4	1	5
Westinghouse.....	5/8	4		4				4		4
Pittsburg disc.....	2	3		3				3		3
Pittsburg disc.....	1 1/2	11	1	12				11	1	12
Pittsburg disc.....	1	20	1	21				20	1	21
Pittsburg disc.....	3/4	22		22				22		22
Pittsburg disc.....	5/8	1,483	68	1,551	1			1	68	1,552
Niagara.....	1						1			1
Niagara.....	3/4						1			1
Totals.....		3,223	145	3,368	51	4	55	3,274	149	3,423

TABLE NO. 17.

EXPENSE FOR MAINTAINING PUMPING STATIONS AND RESERVOIR FOR YEARS 1891-2-3-4-5-6-7 AND 8, MCCAR-  
RON LAKE STATION.

YEAR.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891	\$3,540.00	\$4,702.12	\$213.86	\$220.06	\$38.50	\$8,725.14	1,106,024,800	3,039,232	2,134,000	5,840	871,000
1892	3,575.00	5,400.80	502.36	37.82	36.75	9,352.82	1,071,130,320	2,934,603	2,088,734	5,580	823,070
1893	3,563.00	5,413.30	279.56	329.46	Electric.	9,615.32	1,208,531,200	3,557,674	2,147,888	5,894	320,000
1894	3,706.00	5,012.85	237.00	351.12	5.20	9,313.05	1,300,813,800	3,892,110	2,345,731	6,427	338,600
1895	3,652.00	5,034.79	243.57	280.09	5.20	9,294.65	1,536,012,000	4,210,710	2,538,020	6,948	450,700
1896 (13 mos.)	3,747.00	5,043.04	262.40	365.74	.....	10,384.78	1,451,524,200	4,101,011	2,751,068	6,915	450,700
1897	3,690.00	3,898.07	237.45	101.06	.....	7,827.29	1,290,312,340	3,507,765	2,074,308	5,692	452,301
1898	3,754.50	2,923.00	233.34	83.14	4.72	7,058.70	1,456,108,200	3,980,501	2,205,128	5,992	452,301

\*Decrease.

## BALDWIN LAKE STATION.

YEAR.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.		Daily Increase in Pumping, Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891	\$1,507.16	\$4,008.44	\$51.98	\$77.39	\$22.14	\$8,657.11	1,983,024,500	8,077,635	Coal 150,325 Wood 797%	.....	.....
1892	1,002.08	941.00	56.28	56.12	11.80	2,127.39	1,153,794,000	9,470,290	Wood 576	.....	.....
1893	1,145.00	778.42	45.18	303.99	10.35	2,343.00	1,104,158,000	9,210,023	Wood 461%	.....	.....
1894	1,245.00	1,152.05	49.80	251.63	10.39	2,739.44	1,449,360,000	9,052,406	Wood 0801%	4%	.....
1895	1,450.00	2,524.46	23.71	45.19	27.00	4,070.50	1,914,940,000	8,824,053	Wood 821	4	.....
1896 (13 mos.)	1,564.70	1,097.88	17.98	14.40	15.03	3,310.79	1,917,058,000	9,271,715	Wood 841%	4.3	.....
1897	35.00	56.00	.....	.....	.....	35.00	.....	.....	.....	.....	.....
1898	116.00	56.00	.....	.....	.....	172.00	.....	.....	.....	.....	.....

TABLE NO. 18.

## COMPARATIVE STATEMENT OF HOSE VIOLATIONS FOR 1894-5-6-7 AND 8.

VIOLATIONS.	1894.			1895.			1896.			1897.			1898.		
	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.
Hose, 1 violations.....	204	126	329	116	87	223	153	46	201	91	9	100	130	15	145
Hose, 2 violations.....	28	16	44	5	1	6	10	3	13	2	1	3	5	5	5
Hose, 3 violations.....	13	7	20	1	1	2	1	1	2	2	2	4	1	1	2
Hose, 4 violations.....	2	2	4	3	1	4	3	3	6	1	1	2	1	1	2
Hose, 5 violations.....	1	1	2	3	1	4	3	3	6	1	1	2	1	1	2
Hose, 6 violations.....	2	1	3	1	1	2	1	1	2	1	1	2	1	1	2
Hose, 7 violations.....	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
Reel, 6 to 9 p. m., 1 violation.....	185	50	235	34	34	68	61	4	65	37	1	38	65	1	66
Reel, 6 to 9 p. m., 2 violations.....	22	14	36	6	6	12	6	1	7	2	1	3	1	1	2
Reel, 6 to 9 p. m., 3 violations.....	6	2	8	2	2	4	1	1	2	1	1	2	1	1	2
Reel, 6 to 9 p. m., 4 violations.....	2	1	3	2	2	4	1	1	2	1	1	2	1	1	2
Reel, 6 to 9 p. m., 7 violations.....	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
Hose, all day, 1 violation.....	102	34	136	1	1	2	40	3	43	26	9	35	68	6	74
Hose, all day, 2 violations.....	25	10	35	1	1	2	1	1	2	3	3	6	1	1	2
Hose, all day, 3 violations.....	2	4	6	1	1	2	1	1	2	1	1	2	1	1	2
Hose, all day, 4 violations.....	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2
Totals.....	648	274	922	186	88	276	240	57	326	153	19	182	200	10	285

## NUMBER OF PERMITS ISSUED ANNUALLY TO PLUMBERS SINCE 1884:

1884.....	718	1888.....	1,707	1892.....	1,640	1896.....	1,173
1885.....	1,454	1889.....	2,424	1893.....	1,382	1897.....	1,060
1886.....	1,477	1890.....	2,182	1894.....	1,065	1898.....	1,104
1887.....	1,613	1891.....	1,991	1895.....	1,770		



## PUMPING STATIONS AND RESERVOIR.—Continued.

## VADNAIS LAKE STATION.

YEAR.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	WATER PUMPED.		FUEL, COAL, ETC.
							Annually.	Daily.	Annually.
1891	\$1,100.00	\$1,081.68	\$50.75	\$197.12	\$8.36	\$2,435.91	297,750.000		245,800
1892	1,020.00	1,055.25	73.71	192.19	23.99	3,127.05			
1893	600.00			21.35		621.35			
1894	612.50	1,508.89	21.06	219.73	20.00	2,671.80	337,100.000		324,387
1895	848.33	1,106.00	47.50	31.58	11.64	2,044.06	237,043.000		550,000
1896 (13 months)	1,147.48	1,018.77	44.22	38.76	32.52	2,681.75	939,011.800	2,304.252	612,014
1897	704.00	479.83	6.36	40.02	9.81	1,297.15	280,286.350		185,500
1898	1,008.00	1,049.40	61.82	73.81	18.55	2,213.67	924,705.000	4,546.561	589,300

## WEST ST. PAUL STATION.

1893	\$1,237.75	\$589.63	\$29.72	\$23.50	\$15.10	\$1,895.70	10,015.722		200,143	571
1894	1,320.00	328.94	2.88	28.83	14.20	1,694.87	9,123.480	27.440	109,220	483
1895	1,320.00	290.50	5.27	26.47	9.68	1,664.32	10,520.040	28.848	174,600	470
1896 (13 months)	1,430.00	529.80	4.58	33.37	12.00	2,009.83	13,497.130	33.988	212,200	535
1897	1,320.00	361.22	5.36	42.86	11.60	1,741.04	16,018.200	43.896	229,800	629
1898	1,320.00	355.97	1.60	40.76	9.06	1,727.42	22,668.600	61.654	200,200	742

## CENTERVILLE STATION.

1897	\$843.50	\$1,764.85	\$35.92	\$2.58	\$9.54	\$2,656.39				
1898	902.00	12.00	38.58	16.18	9.41	978.17	596,535.200	14,029.658	100 1/4	4 cords.

## RESERVOIR.

Year.	Salaries.	Year.	Salaries.
1891		1895	\$405.00
1892		1896 (13 months)	480.00
1893		1897	405.00
1894		1898	405.00

TABLE NO. 19.  
STATEMENT SHOWING THE NUMBER OF MILES OF PIPE LAID ANNUALLY TO DATE, EXPENSE OF SAME, FRONT-  
AGE TAX, ETC.

	MAINS LAID.		Expenditure on Account of Laying Mains.	Construction Outside of City.	Annual Main- tenance.	Number of Applications for Taps.	Annual Receipts from Consumers.	Increase.	Frontage Tax Receipts.	No. of Fire Hydrants in Use.	Frontage Tax As- essment.	Years Fringe Tax Has Been Paid Inc'l '94.	Years More to Pay on Basis of 10 Years.
	Miles.	Feet.											
To Aug. 10, 1893.	23	1,062				2,007				188			
From Aug. 10, '82, to Dec. 1, '82.		3,703	a \$12,300.44	\$1,506.80	\$1,671.58	118				198			
From Dec. 1, '82, to Dec. 1, '83.	4	4,897	61,003.97	100,021.10	6,854.30	301				230			
From Dec. 1, '83, to Dec. 1, '84.	16	1,229	157,180.31	606,686.93	11,473.84	600				315	\$12,862.76	11	
From Dec. 1, '84, to Dec. 1, '85.	23	2,583	267,586.90	40,148.36	19,275.58	1,000			\$12,269.50	491	30,590.06	10	
From Dec. 1, '85, to Dec. 1, '86.	18	3,334	138,694.54	19,657.46	17,976.64	1,008			19,538.26	673	33,787.68	8	
From Dec. 1, '86, to Dec. 1, '87.	20	2,207	225,443.70	32,975.47	22,800.58	1,072	\$106,635.23	\$12,976.71	32,405.91	868	46,388.88	7	
From Dec. 1, '87, to Dec. 1, '88.	28	3,392	288,018.19	97,736.31	23,769.81	1,218	112,720.01	6,084.18	43,026.91	1,134	58,609.10	6	
From Dec. 1, '88, to Dec. 1, '89.	35	4,063	257,689.78	80,690.69	26,122.69	1,818	124,920.90	12,500.80	55,066.01	1,471	76,706.21	5	
From Dec. 1, '89, to Dec. 1, '90.	26	4,085	211,013.68	26,026.29	36,082.75	1,407	138,913.61	15,992.71	73,079.70	1,748	90,680.06	4	
From Dec. 1, '90, to Dec. 1, '91.	5	3,696	46,029.69	38,937.07	38,473.82	1,075	159,561.69	20,148.48	88,987.80	1,813	117,947.05	3	
From Dec. 1, '91, to Dec. 1, '92.	14	1,946	118,343.20	41,327.25	35,340.12	881	171,164.69	11,930.40	112,082.57	1,968	123,886.45	2	
From Dec. 1, '92, to Dec. 1, '93.	8	1,946	63,325.15	4,590.46	36,404.84	625	177,595.21	6,430.62	167,890.11	2,067	135,336.46	1	
From Dec. 1, '93, to Dec. 1, '94.	6	646	42,287.17	6,198.62	39,130.72	625	179,246.53	1,372.11	112,115.03	2,131	143,001.79		10
From Dec. 1, '94, to Dec. 1, '95.	8	13	f \$1,300.58	24,624.65	39,906.14	701	190,714.78	270.20	147,171.40	2,200	125,374.26		
From Dec. 1, '95, to Dec. 31, '96.	3	1,185	h 64,325.93	116,504.23	g 41,800.24	540	g 190,714.78	g 11,468.23	123,172.48	2,292	114,925.17		
From Dec. 31, '96, to Dec. 31, '97.	2	490	23,305.72	27,885.79	37,105.41	430	170,706.35	19,918.43	106,448.35	2,340	101,052.58		
From Dec. 31, '97, to Dec. 31, '98.	2	3,010	19,128.60	54,396.92	38,124.41	530	167,154.27	13,642.08	100,927.35	2,268	93,075.68		
Less relaid and mains abandoned.	249	3,720	2,035,636.41	\$1,323,032.49	\$471,470.47	15,742			\$1,147,310.49				
Net amount mains.	7	4,851							\$3,164.48				
	241	4,149							\$1,144,152.01				

a This includes relaying 16-inch pipe on Lafayette avenue near Trout Brook, of regrading street, at an expense of \$4,677.97.

b Pumping station established for high service in fall of 1884.

c Pumping station established for well plant at Vadnais lake, also Rice lakes.

d Pumping station established for high service in West St. Paul in fall of 1892.

e This includes laying the 20-inch force main to reservoir.

f This is for a period of 13 months.

g This includes laying 9,234 feet of 30-inch supply main on Dale street from reservoir to Dale and Front, at an expense of \$38,365.78.

h This includes laying 7,680 feet of 36-inch cast iron force main from McCarron lake pumping station to high service reservoir, at an expense of \$49,347.64.

i Decrease.

\* Amount refunded.

TABLE NO. 20.

STATEMENT SHOWING NUMBER OF METERS, CONSUMPTION OF WATER, AMOUNTS RECEIVED FOR WATER AND METER RENTS, AND AVERAGE RATE PER MONTH.

MONTH.	Number of Meters.	Consumption, Cubic Feet.	Amount Received for Water.	Amount Received for Meter Rent.	Ave. Rate per 100 Cubic Feet.
<b>1896.</b>					
January .....	1,155	5,070,903	\$4,824.93	\$234.00	.08081
February .....	1,164	6,238,792	5,022.64	235.00	.08083
March .....	1,224	6,187,889	5,000.19	245.42	.08096
April .....	1,241	6,453,270	5,212.08	249.48	.08078
May .....	1,285	6,274,503	5,164.62	255.48	.08231
June .....	1,309	6,809,003	5,587.64	258.61	.0826
July .....	1,378	6,523,906	5,387.94	274.81	.08258
August .....	1,415	6,801,623	5,596.42	274.80	.08228
September .....	1,489	7,892,095	6,305.34	289.77	.07989
October .....	1,515	6,518,949	5,324.12	292.80	.08167
November .....	1,528	6,541,052	5,309.11	290.25	.0811
December .....	1,546	5,935,142	4,886.44	291.05	.08233
Totals .....		78,147,427	\$63,621.47	\$3,192.07	.08141
<b>1897.</b>					
January .....	1,594	6,249,091	\$5,103.00	\$299.19	.081
February .....	1,601	5,836,416	4,821.99	298.73	.0829
March .....	1,719	6,123,406	5,011.21	315.12	.0818
April .....	1,758	6,095,240	5,072.35	322.14	.0832
May .....	1,821	5,947,842	4,274.08	332.49	.0718
June .....	1,867	6,208,840	4,494.09	339.41	.0708
July .....	2,000	6,320,138	4,589.55	380.46	.0721
August .....	2,059	6,671,269	4,738.88	366.37	.071
September .....	2,183	6,618,801	4,840.61	389.06	.07315
October .....	2,242	6,542,875	4,704.48	399.73	.0728
November .....	2,280	6,384,306	4,620.55	399.97	.07226
December .....	2,298	6,285,372	4,574.95	402.38	.0726
Totals .....		75,392,211	\$50,865.72	\$4,225.05	.0754
<b>1898.</b>					
January .....	2,380	6,182,474	\$4,597.74	\$410.23	.0729
February .....	2,389	6,152,653	4,502.29	412.87	.0731
March .....	2,508	6,583,278	4,789.19	442.77	.0724
April .....	2,619	6,313,093	4,721.24	451.35	.0747
May .....	2,672	6,893,160	5,040.60	462.66	.0731
June .....	2,750	7,404,121	5,301.53	475.33	.0728
July .....	2,808	7,320,745	5,500.73	485.65	.0751
August .....	2,968	7,895,577	5,793.18	507.11	.0733
September .....	3,196	8,365,497	6,171.40	538.33	.0737
October .....	3,320	7,616,828	5,501.12	562.18	.0734
November .....	3,346	7,664,539	5,545.89	563.80	.0725
December .....	3,355	7,546,785	5,472.34	563.94	.0725
Totals .....		85,932,690	\$63,007.61	\$5,896.42	.0732

## LIST OF VOUCHERS PAID FROM JAN. 1, 1898, TO DEC. 31, 1898.

JANUARY, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9269	C. L. Horst, city treasurer.....	Pay roll for December, 1897.....	\$3,262.90
9270	C. L. Horst, city treasurer.....	Interest due Jan. 1, 1898.....	5,850.00
9271	Pittsburgh Meter Co.....	Est. No. 7, meters.....	476.00
9272	G. F. Moulton.....	Est. No. 1 and final, paving brick.....	350.00
9273	Howard-Harrison Iron Co.....	Est. No. 1 and final, specials.....	945.50
9274	N. W. Fuel Co.....	Est. No. 4, fuel.....	67.80
9275	N. W. Stamp Works.....	Stamp.....	.65
9276	Universal Machine Works.....	Facing meter.....	.65
9277	Thos. Brennan Lumber Co.....	Lumber.....	5.89
9278	N. W. Telephone Exchange Co.....	Repairing country line.....	2.39
9279	Paul Bork.....	Two cushions.....	3.50
9280	W. J. Sonnen.....	Thermometers.....	5.00
9281	J. G. Duggan.....	Repairing tools, etc.....	4.95
9282	Adam Decker & Co.....	Nails, tools.....	9.70
9283	Mitsch Wagon and Carriage Co.....	Sharpening tools.....	9.45
9284	Jameson, Hevener & Co.....	Feed.....	11.57
9285	Estate of James Gilfillan.....	Rent of storage lot.....	25.00
9286	Lee & Hoff Manufacturing Co.....	Machine work.....	12.15
9287	St. Paul Foundry Co.....	Cast weights.....	19.20
9288	Thos. Fitzpatrick & Son.....	Bookholder.....	6.75
9289	Mahle & Sutmar.....	Sharpening tools.....	8.46
9290	D. L. Bell.....	Cement.....	218.09
9291	South Park Foundry and Machine Co.....	Brass goods and hydrants repaired.....	36.10
9292	Brown, Treacy & Co.....	Frontage tax.....	18.58
9293	Wycoff, Seamans & Benedict.....	Typewriters' supplies.....	2.90
9294	H. E. Wedelstaedt & Co.....	Stationery.....	6.68
9295	St. Paul Furniture Co.....	Plugs for No. 3 pipe.....	5.25
9296	D. D. Smith, agent, the Barney Bldg.....	Light for office.....	11.50
9297	H. C. Boyeson Stationery Co.....	Stationery.....	4.75
9298	Robert W. Hunt & Co.....	Inspecting special castings.....	10.09
9299	P. N. Lindquist.....	Horseshoeing.....	6.50
9300	Daniel Cashill & Co.....	Horseshoeing.....	4.00
9301	The Crane & Ordway Co.....	Pipe fittings.....	5.96
9302	Robinson & Cary Co.....	Wire rope.....	4.50
9303	Nicols & Dean.....	Bolts and washers.....	1.29
9304	Farwell, Ozmun, Kirk & Co.....	Hardware.....	4.73
9305	Foley Bros. & Kelly Mercantile Co.....	Oil, candles, matches.....	9.28
9306	Griggs Bros.....	Hay.....	9.69
9307	M. F. Brennan.....	Livery for engineers to McCarron Lake.....	28.00
9308	John Martin Lumber Co.....	Lumber.....	2.69
9309	Samuel Carmen Printing Co.....	Job printing.....	6.75
9310	Peter Johnson.....	Sand, McCarron Lake station.....	32.25
9311	Warren-Scharf Asphalt Paving Co.....	Relaying pavement.....	67.40
9312	Joseph Lamotte.....	Straw for stand pipes.....	12.00
9313	W. H. Jackson.....	Vault Centerville pump house.....	38.75
9314	Fairbanks, Morse & Co.....	Est. No. 2 and final, laying pipe.....	65.10
9315	W. H. Ulmer.....	Foundation for pump, McCarron Lake.....	20.40
9316	P. H. Thornton.....	Est. No. 3, final.....	42.27
9317	Jas. Shisly.....	Est. No. 4 and final, drayage.....	56.54
9318	John Caulfield, secretary.....	Cash advanced per voucher.....	50.05
9319	Jas. Shisly.....	Drayage.....	134.59
9320	Builders' Iron Foundry Co.....	Est. No. 1, Venturi meter.....	807.50
Total.....			\$12,802.17

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## LIST OF VOUCHERS.—Continued.

FEBRUARY, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9321	C. L. Horst, city treasurer.....	Interest due Feb. 1, 1898.....	\$3,750.00
9322	Hennessey & Cox.....	Est. No. 6 and final, engine house..	50.00
9323	D. F. De Wolf.....	Hay.....	19.85
9324	Scribner & Libby Co.....	Balance on roofing storage shed.....	10.00
9325	Pioneer Press Co.....	Blank books and job printing.....	15.70
9326	The Dispatch Printing Co.....	Advertising.....	6.00
9327	H. M. Smyth Printing Co.....	Job printing.....	23.00
9328	The Globe Co.....	Advertising.....	2.25
9329	N. W. Engineering Co.....	Electric lamps and wire.....	13.80
9330	Jameson, Hevener & Co.....	Oats.....	50.07
9331	Viscosity Oil Co.....	Engine oil.....	11.53
9332	Craig Oil Co.....	Engine oil.....	8.90
9333	Minnesota and Kettle River Sandstone Co.....	Est. No. 1, stone for foundation, McCarron Lake.....	554.58
9334	C. L. Horst, city treasurer.....	Pay roll for January, 1898.....	3,152.65
9335	American Hoist and Derrick Co.....	Bronze casting for boilerplate.....	9.02
9336	De Coster & Clark Co.....	Desk for office.....	28.00
9337	George J. Mitsch Drug Co.....	Meal and paint.....	5.27
9338	N. W. Fuel Co.....	Fuel, Est. No. 5.....	82.58
9339	P. N. Lindquist.....	Horseshoeing.....	5.00
9340	Adam Decker & Co.....	One gross screws.....	.43
9341	Estate of James Gilfillan.....	Rent of storage lot.....	25.00
9342	W. W. Benjamin.....	Livery to pump house.....	25.00
9343	Mitsch Wagon and Carriage Co.....	Blacksmithing.....	4.70
9344	Michael Maurus.....	Blacksmithing.....	4.25
9345	Samuel Carmen Printing Co.....	Job printing.....	5.50
9346	Gretner & Co.....	Brick.....	152.00
9347	D. D. Smith, agent, the Barney Bldg.	Light for office.....	7.50
9348	John Martin Lumber Co.....	Lumber.....	7.80
9349	Boerlinger & Son.....	Drawing ink.....	1.00
9350	S. C. Smith.....	Livery to Centerville on account lawsuit.....	3.00
9351	Joseph M. Forcier.....	Board and stabling.....	2.20
9352	C. A. Daniel, proprietor, Quaker City Rubber Co.....	Rubber packing.....	11.23
9353	Thomson Meter Co.....	Meters.....	99.20
9354	C. L. Horst, city treasurer.....	Interest on bonds to March 1, 1898.	6,750.00
9355	H. C. Boyeson Stationery Co.....	Stationery.....	6.95
9356	St. Paul Furniture Co.....	Strip for book case.....	.50
9357	T. L. Blood & Co.....	Paint material.....	11.10
9358	Hennessey & Cox.....	Repairing asphalt.....	74.25
9359	D. L. Bell.....	Portland cement.....	138.00
9360	Daniel Cashill & Co.....	Horseshoeing.....	4.00
9361	Brown, Treacy & Co.....	Stationery.....	8.87
9362	Henry Wedelstaedt.....	Stationery.....	9.37
9363	Foley Bros. & Kelly Mercantile Co.	Oil and candles.....	11.88
9364	Robinson, Cary & Co.....	Brass pipe, etc.....	1.60
9365	Ogden, Merrill & Greer.....	Dusters.....	.83
9366	Fairbanks, Morse & Co.....	Estimate No. 6, laying mains.....	104.22
9367	H. P. Rugg.....	White waste.....	13.84
9368	Moorhead & Horrigan.....	Livery.....	2.00
9369	The Western Supply Co.....	Pipe fittings.....	1.17
9370	Rudolph Miller.....	Hauling wood to Baldwin lake.....	6.00
9371	Farwell, Ozmun, Kirk & Co.....	Tar paper.....	2.50
9372	Chas. Friend & Son.....	Harness dressing.....	.85
9373	The Crane & Ordway Co.....	Brass fittings, etc.....	30.81
9374	The Dispatch Printing Co.....	Advertising.....	.96
9375	Chas. Weinhagen Co.....	Strawboard tubes.....	1.25
9376	John Caulfield, secretary.....	Cash advanced per voucher.....	100.80
9377	James Shiely.....	Hauling brick, etc.....	32.75
Total.....			\$15,431.63



## LIST OF VOUCHERS.—Continued.

MARCH, 1898.

No. of Voucher.	NAME.	CLAIM.	AMOUNT.
9378	C. L. Horst, city treasurer.....	Pay roll for February, 1898.....	3,042.57
9379	N. W. Shot and Lead Works.....	Lead pipe.....	133.59
9380	Pioneer Press.....	Job printing.....	15.00
9381	Jno. Rogers, Jr., & Bro.....	Insurance on wood.....	12.00
9382	J. H. Baker, Jr., & Co.....	One Duff drilling attachment.....	3.00
9383	Diebold Safe and Lock Co.....	One Japanese box vault.....	.95
9384	J. G. Duggan.....	Sharpening tools.....	1.45
9385	De Coster & Clark.....	Desk and chair.....	19.50
9386	N. W. Engineering Co.....	Lamp fittings.....	2.60
9387	Cornplanter Oil Co.....	Gasoline.....	1.80
9388	Rudolph Miller.....	Wood, Baldwin Lake station.....	50.00
9389	St. Paul Furniture Co.....	Recovering desks.....	8.75
9390	South Park Foundry and Machine Co.	Valve per contract.....	280.00
9391	C. L. Horst, city treasurer.....	Interest due April 1, 1898.....	25,000.00
9392	Estate of Jas. Giffilan.....	Rent of storage lot.....	25.00
9393	D. D. Smith, agent, the Barney Bldg.	Electric light for office.....	7.50
9394	J. H. Schurmeier Wagon and Carriage Co.	Blacksmithing.....	11.80
9395	P. N. Lindquist.....	Horseshoeing.....	6.00
9396	N. Feyen.....	One jack screw.....	2.25
9397	South Park Foundry and Machine Co.	Cast plates.....	16.50
9398	John Martin Lumber Co.....	Lumber.....	45.41
9399	Geo. J. Mitsch Drug Co.....	Supplies.....	2.55
9400	T. L. Blood & Co.....	Paint.....	1.97
9401	Dan, Cashill & Co.....	Horseshoeing.....	7.25
9402	Schroeder & Weyh.....	Two dozen chisels.....	7.20
9403	J. G. Duggan.....	Sharpening tools.....	1.85
9404	H. C. Boyeson Stationery Co.....	Stationery.....	9.45
9405	Prendergast Bros.....	Brass wire screen.....	.30
9406	H. E. Wedelstaedt & Co.....	Stationery.....	16.87
9407	N. W. Stamp Works.....	Repairing seal.....	.75
9408	The Crane & Ordway Co.....	Pipe fittings and packing.....	10.42
9409	Farwell, Ozmun, Kirk & Co.....	Tools.....	17.83
9410	Foley Bros. & Kelly Mercantile Co.	Matches.....	1.00
9411	Boeringer & Son.....	Drawing material.....	1.45
9412	Nicols & Dean.....	Cast washers.....	1.17
9413	Franklin Machine Works.....	Cutting and facing pipes.....	3.00
9414	D. L. Bell.....	Cement.....	6.55
9415	John Kenny.....	Repairing boiler, West Side station	10.00
9416	Brown, Treacy & Co.....	Stationery.....	14.85
9417	Pioneer Press Co.....	Job printing.....	11.45
9418	Mitsch Wagon and Carriage Co.....	Blacksmithing.....	15.05
9419	Robinson & Cary Co.....	Boiler tube, tools, etc.....	22.16
9420	Gribben Lumber Co.....	Lumber.....	37.22
9421	Cornplanter Oil Co.....	Oil and gasoline.....	4.77
9422	P. R. L. Hardenbergh & Co.....	One oak bend.....	3.30
9423	Union Water Meter Co.....	Meters and attachments.....	51.60
9424	Wedelstaedt & Carman.....	Job printing.....	11.75
9425	N. W. Fuel Co.....	Est. No. 6, fuel.....	898.44
9426	Jno. Fitzgerald, superintendent of St. Paul workhouse.....	Brooms.....	4.00
9427	C. L. Horst, city treasurer.....	Local assessments.....	203.58
9428	National Meter Co.....	Meter fittings.....	53.70
9429	E. G. Smith.....	Analysis of water.....	62.50
9430	John Caulfield, secretary.....	Bills paid per vouchers.....	65.55
9431	The E. P. Allis Co.....	Est. No. 4 and final, contract, April 29, 1896.....	344.85
9432	The E. P. Allis Co.....	Est. No. 1, ten-million engine.....	11,350.00
9433	Robert W. Hunt & Co.....	Est. No. 1, testing pumps, etc.....	300.00
9434	John Caulfield, secretary.....	Bills paid per voucher.....	105.89
9435	Hermon W. Phillips.....	Legal expense, A. Wenzel vs. Board, etc.....	398.54
Total.....			42,743.98

## LIST OF VOUCHERS.—Continued.

APRIL, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9436	Chas. D. Lynch.....	Automatic drip valves.....	\$272.81
9437	Capitol Printing Co.....	5,000 force reports.....	7.50
9438	Bingham & Taylor.....	Extension tops for stop boxes.....	141.25
9439	Fairbanks, Morse & Co.....	Est. No. 7, pipe laying.....	325.20
9440	Scribner & Libby Co.....	Making bolts, etc.....	9.50
9441	Gribben Lumber Co.....	Lumber for meter boxes.....	17.63
9442	N. W. Shot and Lead Works.....	Two-inch lead pipe.....	7.48
9443	Minnesota Type and Foundry Co.....	Repairing numbering machine.....	1.00
9444	C. Neuman.....	Lunches for trips to view lakes, etc.....	15.50
9445	T. L. Blood.....	Mineral paint.....	.05
9446	Jos. N. Forcier.....	Centerville, board and stabling.....	2.75
9447	Pittsburgh Meter Co.....	Est. No. 1, meters.....	1,957.20
9448	C. L. Horat, city treasurer.....	Pay roll, March, 1898.....	3,061.55
9449	C. L. Horat, city treasurer.....	Interest due May 1, 1898.....	8,750.00
9450	Pioneer Press Co.....	Est. No. 1, and final, printing annual report.....	296.58
9451	Pioneer Press Co.....	Job printing.....	58.35
9452	Prendergast Bros.....	Patent smoke stack.....	7.50
9453	Mitch Wagon and Carriage Co.....	Blacksmithing.....	61.25
9454	The Dispatch Printing Co.....	Advertising for lead pipe.....	1.70
9455	H. P. Rugg & Co.....	Tools.....	1.05
9456	Thos. Brennan Lumber Co.....	Lumber.....	9.25
9457	J. G. Dugan.....	Sharpening tools, etc.....	4.00
9458	P. N. Lindquist.....	Horseshoeing.....	5.00
9459	D. Cashill & Co.....	Horseshoeing.....	5.00
9460	A. Decker & Co.....	Screws.....	.50
9461	N. W. Shot and Lead Works.....	Lead pipe.....	9.06
9462	Viscosity Oil Co.....	Cylinder oil.....	21.84
9463	H. C. Boyeson Stationery Co.....	Stationery.....	4.05
9464	Jameson, Hevener & Co.....	Hay.....	8.53
9465	The Crane & Ordway Co.....	Pipe fittings.....	6.41
9466	H. E. Wedelstaedt & Co.....	Stationery.....	7.54
9467	The Globe Co.....	Advertising.....	3.00
9468	H. M. Smyth Printing Co.....	Job printing.....	4.50
9469	Brown, Treacy & Co.....	Stationery, etc.....	21.78
9470	Farwell, Ozmum, Kirk & Co.....	Tools, locks, etc.....	14.00
9471	D. L. Bell.....	Mankato cement.....	33.00
9472	Foley Bros. & Kelly Mercantile Co.....	Candles, matches, etc.....	8.20
9473	Robinson & Cary Co.....	Tools, etc.....	62.59
9474	N. W. Fuel Co.....	Est. No. 9, fuel.....	46.32
9475	Allen & Co.....	Livery.....	5.00
9476	Gribben Lumber Co.....	Lumber.....	10.82
9477	Geo. J. Mitsch Drug Co.....	Supplies.....	4.30
9478	The Western Supply Co.....	Pipe fittings.....	1.20
9479	T. L. Blood Co.....	Lead and oil.....	1.09
9480	John Kenny.....	Angle iron.....	.75
9481	Cornplanter Oil Co.....	Gasoline.....	1.05
9482	S. Paul Stone Co.....	Tiling.....	1.02
9483	Illinois Malleable Iron Co.....	Stop box covers.....	32.50
9484	Paul Bork.....	Repairing chairs.....	1.35
9485	H. G. Neal.....	Repairing awning.....	1.00
9486	Moorhead & Horrigan.....	Carriage to Baldwin Lake.....	6.00
9487	Estate of Jas. Giffillan.....	Rent of storage lot.....	25.00
9488	D. D. Smith, agent, the Barney Bldg.....	Electric light for office.....	7.50
9489	John Caulfield, secretary.....	Hills paid per voucher.....	68.51
9490	John Kenny.....	Est. No. 1 and final, boiler.....	1,223.00
9491	Pittsburgh Meter Co.....	Est. No. 2, meters.....	800.00
9492	Hersey Manufacturing Co.....	Meter fittings.....	32.13
9493	W. K. Sharood.....	Horse for department use.....	130.00
9494	S. C. Smith.....	Livery.....	12.00
9495	A. O. Powell.....	Expert services, Wenzel vs. Board.....	55.00
9496	Tracy Lyon.....	Expert services, Wenzel vs. Board.....	55.00
9497	F. W. Coppellan.....	Expert services, Wenzel vs. Board.....	55.00
9498	The Western Supply.....	Est. No. 1 and final, lead pipe and tin.....	1,754.66
9499	Pioneer Press Co.....	Job printing.....	68.75
9500	Tierney & Co.....	Hran.....	.06
9501	The Western Supply Co.....	Pipe fittings.....	69.80
9502	H. A. Muckle Manufacturing Co.....	Huggy for department use.....	105.00
9503	Anna Sweeney.....	Frontage tax refunded.....	40.32
9504	G. S. Heron.....	Frontage tax refunded.....	16.03
	Total.....		\$20,457.03

## LIST OF VOUCHERS.—Continued.

MAY, 1898.

No. of voucher.	NAME.	CLAIM.	Amount.
9505	C. L. Horst, city treasurer.....	Pay roll for April, 1898.....	\$3,588.10
9506	C. L. Horst, city treasurer.....	Interest due June 1, 1898.....	7,000.00
9507	Howard-Harrison Iron Co.....	Special castings.....	187.00
9508	Rudolph Miller.....	5,100 pounds upland hay.....	20.40
9509	Joseph Forcier.....	Witness, Jas. Wenzel vs. Board.....	4.88
9510	The Engineering Record.....	One year's subscription.....	5.00
9511	The E. P. Allis Co.....	Special castings, etc., for pump.....	114.40
9512	Griggs Bros.....	Hay.....	7.85
9513	St. Paul Furniture Co.....	21 fset oak for second floor office.....	1.05
9514	Adam Decker & Co.....	Hardware.....	.99
9515	Gribben Lumber Co.....	Lumber.....	2.25
9516	P. R. L. Hardenbergh & Co.....	Set harness.....	11.25
9517	Thos. Brennan Lumber Co.....	Lumber.....	2.55
9518	J. G. Duggan.....	Sharpening tools.....	2.80
9519	The Dispatch Printing Co.....	Advertising for material.....	8.50
9520	The Barney Building, M. M. Steffy, agent.....	Electric light, office.....	7.50
9521	H. C. Boyeson Stationery Co.....	Stationery.....	1.50
9522	S. Carman Printing Co.....	Job printing.....	7.25
9523	Henry Schuette.....	Stabling horse.....	3.00
9524	H. G. Neal.....	Awnings.....	20.00
9525	Pioneer Press Co.....	Job printing.....	26.00
9526	Rundie & Spence Manufacturing Co.....	One 24-inch Lownes' wrench.....	2.75
9527	H. E. Wedelstaedt & Co.....	Stationery.....	7.93
9528	Robinson & Cary Co.....	Pipe fittings, etc.....	8.45
9529	The Western Supply Co.....	Valves and pipe fittings.....	44.52
9530	Nicols & Dean.....	Machine bolts.....	4.69
9531	Brown, Treacy & Co.....	Stationery.....	5.31
9532	St. Paul Foundry Co.....	Beams, McCarron Lake station.....	10.75
9533	D. L. Bell.....	Louisville cement.....	4.00
9534	Mitsch Wagon and Carriage Co.....	Blacksmithing and painting truck.....	22.05
9535	L. L. May & Co.....	Grass seed, reservoir.....	5.50
9536	Foley Bros. & Kelly Mercantile Co.....	Candles and salt.....	4.60
9537	Boeringer & Son.....	Repairing tape.....	.75
9538	T. L. Blood & Co.....	Paint.....	1.05
9539	Chas. Friend & Son.....	Harness fittings, repairs.....	6.45
9540	Estate of Jas. Gillfillan.....	Rent of storage lot.....	25.00
9541	Farwell, Ozmun, Kirk & Co.....	Powder, tools.....	7.41
9542	P. N. Lindquist.....	Horseshoeing.....	4.00
9543	Neptune Meter Co.....	Frost bottoms.....	1.50
9544	Scribner-Libby Co.....	Roll of felt.....	.87
9545	South Park Foundry and Machine Co.....	Est. No. 1, special castings.....	121.52
9546	Daniel Cashill.....	Horseshoeing.....	6.00
9547	The Gribben Lumber Co.....	Lumber.....	17.63
9548	Jno. Martin Lumber Co.....	Lumber.....	9.49
9549	The Crane & Ordway Co.....	Pipe fittings.....	55.62
9550	Geo. J. Mitsch & Co.....	Supplies.....	2.05
9551	A. and W. McGuigan.....	Rod.....	2.50
9552	Craig Oil Co.....	Cylinder oil.....	9.01
9553	John Caulfield, secretary.....	Bills paid per vouchers.....	64.06
9554	Roberts-Goss Co.....	Cutting thread on pipe.....	17.75
9555	Dispatch Printing Co.....	Advertising.....	6.00
9556	The Edward P. Allis Co.....	Est. No. 2, 10-million gallon engine	5,675.00
9557	R. W. Hunt & Co.....	Est. No. 2, inspecting 10-million gallon pump.....	250.00
9558	South Park Foundry and Machine Co.....	Est. No. 2, specials.....	46.23
9559	South Park Foundry and Machine Co.....	Est. No. 1, water gates.....	138.00
9560	Union Brass and Metal Manuf'g Co.....	21 top nuts for hydrant valves.....	4.20
9561	W. B. Rafferty.....	Hauling paving brick to yard.....	30.07
9562	J. H. Schurmeler Wagon and Car- riage Co.....	Sharpening tools.....	17.11
9563	N. W. Fuel Co.....	Est. No. 8, fuel.....	144.07
9564	Thos. Brennan Lumber Co.....	Lumber.....	74.50
9565	Wm. Delaney.....	Refunded frontage tax.....	3.00
9566	St. Paul Foundry Co.....	Channel iron top plates, etc., Mc- Carren Lake station.....	36.33
9567	The Western Supply Co.....	Est. No. 1 and final, pig lead.....	603.45
Total.....			\$18,524.04

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## LIST OF VOUCHERS.—Continued.

JUNE, 1908.

No. of Voucher.	NAME.	CLAIM.	Amount.
9568	The Western Supply Co.	Est. No. 1, brass goods.	\$255.05
9569	De Coster & Clark.	Office chair.	4.50
9570	N. W. Stamp Works.	Rubber stamps.	.30
9571	Scribner-Libby Co.	Sharpening lawn mower.	.75
9572	Griggs Bros.	Oats and burlaps.	74.30
9573	Peter Johnson.	Gravel and sand for paving yard.	17.00
9574	Fielding & Shepley.	Paving, cement, etc., for yard.	41.30
9575	Pioneer Press Co.	Meter registers.	62.50
9576	Wm. H. Ulmer.	Coping stone, yard.	22.75
9577	The Edward P. Allis Co.	Steel plates for 6-million engine.	14.00
9578	Dearborn Drug and Chemical Works.	Cylinder oil.	23.40
9579	Viscosity Oil Co.	One barrel viscosity oil.	21.84
9580	Maendler Bros.	Steel wire broom.	.75
9581	John Kenny.	Boiler steel.	2.25
9582	Lanpher, Finch & Skinner.	Overcharge 4-inch gate.	8.00
9583	Allen & Co.	Livery.	10.00
9584	Bingham & Taylor.	Gate boxes.	62.76
9585	South Park Foundry and Machine Co.	Est. No. 3, specials.	149.46
9586	South Park Foundry and Machine Co.	Sleeve bolts, etc.	7.97
9587	Portland Stone Co.	Cement tiling, McCarron Lake.	127.35
9588	C. L. Horst, city treasurer.	Pay roll for May, 1908.	4,512.85
9589	Hennessey & Cox.	Est. No. 7 and final.	1,546.25
9590	T. L. Blood & Co.	Asphaltum, etc.	3.80
9591	Dispatch Printing Co.	Advertising.	5.61
9592	Gribben Lumber Co.	Lumber.	17.63
9593	Estate of Jas. Gillfillan.	Rent of storage lot.	25.00
9594	John Martin Lumber Co.	Lumber.	177.50
9595	J. G. Duggan.	Sharpening tools.	2.05
9596	Moorhead & Horrigan.	Livery.	8.00
9597	St. Paul Foundry Co.	Beams, top plates, etc., McCarron Lake.	103.65
9598	H. P. Rugg & Co.	Waste, etc.	21.74
9599	Schroeder Bros.	Tin gutters and repairs.	4.24
9600	Thos. Brennan Lumber Co.	Lumber.	21.43
9601	Fairbanks, Morse & Co.	Est. No. 8 and final pipe laying.	21.76
9602	Brown, Treacy & Co.	Stationery.	5.26
9603	St. Paul Fire and Marine Ins. Co.	Insurance on residence at reservoir.	14.40
9604	W. H. Viall.	Hauling coal to Vadnais Lake station.	27.63
9605	Alfred Gustafson.	Damages.	25.00
9606	Mitsch Wagon and Carriage Co.	Repairing buggy.	10.80
9607	Foley Bros. & Kell.	Matches.	1.00
9608	Ogden, Merrill & Greer.	Duster.	.35
9609	Nicols & Dean.	Iron and bolts.	4.33
9610	Chas. Friend & Son.	Harness fittings.	6.40
9611	P. N. Lindquist.	Horseshoeing.	4.00
9612	The George J. Mitsch Drug Co.	Supplies.	10.46
9613	Paul Bork.	Repairing cushion.	1.50
9614	Jacob Koch.	Horseshoeing.	2.00
9615	The Samuel Carmen Printing Co.	Job printing.	7.50
9616	The Board of Fire Commissioners.	Old hose.	64.40
9617	H. E. Wedelstaedt.	Stationery.	8.48
9618	H. C. Boyeson Stationery Co.	Stationery.	5.85
9619	Adam Decker & Co.	Hardware.	10.74
9620	Joseph N. Forster.	Board and supplies.	1.05
9621	Cornplanter Oil Co.	Gasoline.	1.75
9622	Rudolph Miller.	Hay, Baldwin Lake.	4.00
9623	Scribner-Libby Co.	Wrench for 6-million pump.	2.32
9624	Daniel Cashill.	Horseshoeing.	4.50
9625	M. F. Brennan.	Livery.	5.00
9626	Crane & Ordway.	Pipe fittings.	47.77
9627	St. Paul Co-operative Painting Co.	Whitewashing office and pump house.	36.50
9628	J. H. Schurmeier Wagon and Carriage Co.	Iron rods for force main.	21.00
9629	Farwell, Ozmun, Kirk & Co.	Tools, etc.	98.24
9630	Robinson & Cary Co.	Pipe fittings, etc.	15.10



## LIST OF VOUCHERS.—Continued.

JUNE, 1898.—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
9631	Ella S. Dent.....	Erroneous frontage tax.....	4.50
9632	S. C. Smith.....	Livery .....	3.00
9633	Martin Feist.....	Lunch for men cleaning conduit.....	3.50
9634	P. H. Thornton.....	Est. No. 1, pipe laying.....	434.16
9635	C. L. Horst, city treasurer.....	For sinking fund account.....	25,000.00
9636	Pittsburgh Meter Co.....	Est. No. 3, meters.....	800.00
9637	Craig Oil Co.....	Oil .....	20.48
9638	N. W. Fuel Co.....	Est. No. 9, fuel.....	506.03
9639	H. W. Phillips.....	Legal expenses, Wenzel vs Board.....	13.95
9640	Union Brass Metal Manufacturing Co.....	Top nuts street sprinkling hydrants.....	4.80
9641	C. L. Horst, city treasurer.....	Interest due July 1, 1898.....	5,850.00
	Total .....		\$40,287.23



## LIST OF VOUCHERS.—Continued.

JULY, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9642	C. L. Horst, city treasurer.....	Pay roll for June, 1898.....	\$4,851.45
9643	A. and W. McGuiggan.....	Straight edge and pole.....	1.55
9644	The Barney Building, M. M. Steffay, agent.....	Electric light for office.....	7.50
9645	The Western Supply Co.....	Est. No. 2, brass goods.....	82.68
9646	J. B. Wirtz.....	Pipe covering, McCarron.....	59.61
9647	Moorhead & Horrigan.....	Horse and buggy to Pleasant Lake.....	3.00
9648	Shakopes Cement and Lime Co.....	Cement.....	155.17
9649	T. L. Blood & Co.....	Paint, etc.....	2.97
9650	Gribben Lumber Co.....	Lumber.....	59.47
9651	American Hoist and Derrick Co.....	Wire rope clips.....	10.80
9652	W. T. Haney.....	Frontage tax error refund.....	2.50
9653	John J. Bailey.....	Est. No. 1 and final, plumbing.....	121.00
9654	Builders' Iron Foundry.....	Est. No. 2, Venturi meter.....	344.25
9656	South Park Foundry and Machine Co.....	Est. No. 1, fire hydrants.....	315.00
9657	South Park Foundry and Machine Co.....	Est. No. 2, valves.....	76.25
9658	South Park Foundry and Machine Co.....	Est. No. 4, special castings.....	6.33
9659	South Park Foundry and Machine Co.....	Pile driver, hammer and wheel.....	26.50
9660	H. W. Phillips.....	Expenses, district court, Hennepin county.....	4.60
9661	Wm. Poppenberger.....	Plastering addition to Union Park.....	49.00
9662	C. F. Schunemann.....	Horse and buggy to Pleasant Lake.....	14.00
9663	Pioneer Press Co.....	Blank books and job printing.....	52.25
9664	St. Paul Foundry Co.....	Est. No. 2, manhole covers.....	39.00
9665	St. Paul Foundry.....	Weir plate and beams, gate chamber, Pleasant Lake.....	96.00
9666	G. M. Wing.....	Transcribing testimony, Wenzell vs. Board.....	750.00
9667	Gribben Lumber Co.....	Est. No. 1, lumber.....	315.80
9668	John Martin Lumber Co.....	Est. No. 1, lumber.....	562.48
9669	South Park Foundry and Machine Co.....	Est. No. 3, valves.....	230.00
9670	H. E. Wedelstaedt & Co.....	Stationery.....	12.31
9671	N. W. Stamp Works.....	Dating stamp.....	.75
9672	Wycoff, Seamans & Benedict.....	Typewriter supplies.....	4.25
9673	Brown, Treacy & Co.....	Stationery.....	.33
9674	H. C. Boyeson Stationery Co.....	Stationery.....	12.21
9675	Twin City Brick Co.....	Pressed brick, McCarron Lake.....	72.00
9676	Allen & Co.....	Livery.....	5.00
9677	Tierney & Co.....	Feed.....	19.37
9678	Geo. Mitsch Drug Co.....	Supplies.....	19.93
9679	Fielding & Shepley.....	Relaying pavement.....	11.56
9680	Noyes Bros. & Cutler.....	Mercury.....	1.79
9681	Gribben Lumber Co.....	Lumber.....	17.63
9682	P. N. Lindquist.....	Horseshoeing.....	2.00
9683	Nicols & Dean.....	Iron and bolts.....	1.89
9684	H. P. Rugg & Co.....	Pipe fittings.....	1.63
9685	Foley Bros. & Kelly Mercantile Co.....	Candles and matches.....	4.30
9686	Robinson & Cary Co.....	Powder, fuse, etc.....	50.15
9687	The Dispatch Printing Co.....	Advertising.....	3.91
9688	D. Cashill.....	Horseshoeing.....	4.00
9689	St. Paul Stone Co.....	Cement tiling.....	1.80
9690	Andrew Schoch Grocery Co.....	One pail kleansall.....	2.00
9691	The Western Supply Co.....	Valves, nipples.....	29.59
9692	Mitsch Wagon and Carriage Co.....	Ladder irons, Pleasant Lake conduit.....	5.00
9693	Moorhead & Horrigan.....	Livery.....	12.00
9694	Chas. Friend & Son.....	Leather washers.....	.55
9696	Farwell, Ozmun, Kirk & Co.....	Tools, etc.....	43.19
9697	Crane & Ordway Co.....	Pipe, packing and fittings.....	21.88
9698	Smith & Farwell Co.....	Cleaning paper etc., office.....	7.00
9699	Union Brass and Metal Manuf'g Co.....	Brass bolts for meter books.....	4.80
9700	Robert W. Hunt Co.....	Inspecting pipe.....	136.32
9701	Jacob Koch.....	Horseshoeing.....	2.00
9702	Adam Decker & Co.....	Hardware.....	4.38
9703	St. Paul Cartage Co.....	Est. No. 7, drayage.....	155.37
9704	Ohio Pipe Co.....	Est. No. 1, cast iron pipe.....	1,618.84
9705	F. H. Thornton.....	Est. No. 2, pipe laying.....	499.68
9706	Samuel Carlsen Printing Co.....	Job printing.....	6.00
9707	C. L. Horst, city treasurer.....	Interest due Aug. 1, 1898.....	3,750.00
	Total.....		\$14,786.37

## LIST OF VOUCHERS.—Continued.

AUGUST, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9708	C. L. Horst, city treasurer.....	Pay roll for July, 1898.....	\$5,059.91
9709	Owen C. Dann.....	Refunded frontage tax.....	4.00
9710	Anna M. Fernholz.....	Refunded frontage tax.....	6.00
9711	Louis Tingerthal.....	Refunded frontage tax.....	5.00
9712	Joseph Grassinger.....	Refunded frontage tax.....	12.30
9713	Harriet E. McMillan, executrix.....	Refunded frontage tax.....	18.00
9714	John W. Merriam (Theo. Borup).....	Refunded frontage tax.....	31.00
9715	Hamline University.....	Refunded frontage tax.....	68.22
9716	E. F. Lemke.....	Refunded frontage tax.....	73.24
9717	Joseph Dingle.....	Row boat for Lake Phalen.....	25.00
9718	Butler-Ryan Co.....	Common brick.....	21.00
9719	St. Paul Timber and Supply Co.....	Piles for intake Pleasant Lake.....	75.60
9720	Cornplanter Oil Co.....	Oil and Gasoline.....	10.42
9721	Viscosity Oil Co.....	Cylinder oil.....	21.42
9722	Craig Oil Co.....	Engine oil.....	9.01
9723	J. G. Duggan.....	Sharpening tools.....	1.10
9724	Estate of Jas. Gillilan.....	Rent of storage lot.....	25.00
9725	Wm. H. Ulmer.....	Cut stone, McCarron Lake.....	190.00
9726	St. Paul Co-operative Painting Co.....	Painting house and barn, Union Park.....	59.50
9727	Rich & Clymer.....	Envelopes.....	5.00
9728	Fielding & Shepley.....	Relaying pavement.....	20.94
9729	T. L. Blood & Co.....	Paint and oil.....	7.38
9730	A. H. Stem.....	Architectural services.....	35.00
9731	Thomson Meter Co.....	Meter fittings.....	5.54
9732	E. G. Smith.....	Analyses of water.....	62.50
9733	The Ohio Pipe Co.....	Est. No. 2, iron pipe.....	1,272.03
9734	Howard-Harrison Iron Co.....	Est. No. 1, iron pipe.....	3,230.68
9735	W. H. Viall.....	Hauling coal to station.....	17.15
9736	N. W. Fuel Co.....	Est. No. 10, fuel.....	420.94
9737	Review Publishing Co.....	Affidavits, Wenzel vs. Board.....	11.75
9738	Dispatch Printing Co.....	Advertising bids for lumber, etc.....	8.89
9739	P. N. Lindquist.....	Horseshoeing.....	2.00
9740	Jacob Koch.....	Horseshoeing.....	3.00
9741	Daniel Cashill.....	Horseshoeing.....	6.00
9742	J. G. Duggan.....	Blacksmithing.....	9.30
9743	Volkzeitung Printing and Pub. Co.....	Notice of water rents due.....	1.20
9744	Twin City Brick Co.....	Brick, McCarron Lake station.....	5.75
9745	Joseph N. Forcier.....	Board and stabling, foreman.....	10.15
9746	C. F. Schunemann.....	Rent of horse and buggy.....	25.00
9747	Geo. J. Mitsch Drug Co.....	Supplies.....	5.40
9748	Scribner-Libby Co.....	Machine repairs.....	19.80
9749	C. L. Horst, city treasurer.....	Interest due Sept. 1, 1898.....	6,750.00
9750	C. L. Horst, city treasurer.....	For investment in sinking fund.....	20,000.00
9751	John Caulfield, secretary.....	Bills paid per vouchers.....	143.57
9752	Pioneer Press Co.....	Job printing.....	40.60
9753	H. C. Boyeson Stationery Co.....	Stationery.....	2.55
9754	Cnas. Friend & Son.....	Harness fittings.....	5.68
9755	Nicols & Dean.....	Bolts, lag screws, etc.....	.78
9756	Mitsch Wagon and Carriage Co.....	Blacksmithing and repairs.....	14.91
9757	Brown, Treacy & Co.....	Stationery.....	9.74
9758	Pittsburgh Meter Co.....	Est. No. 4, meters.....	1,700.00
9759	Robinson & Cary Co.....	Wire broom, etc.....	9.98
9760	H. P. Rugg & Co.....	Brass goods, etc.....	3.74
9761	Viscosity Oil Co.....	Cylinder oil.....	21.00
9762	John Martin Lumber Co.....	Est. No. 2, lumber.....	39.59
9763	John Martin Lumber Co.....	Lumber.....	25.35
9764	Gribben Lumber Co.....	Est. No. 2, lumber.....	6.72
9765	Gribben Lumber Co.....	Lumber.....	19.39
9766	H. E. Wedelstaedt & Co.....	Stationery.....	4.88
9767	The S. Carmen Printing Co.....	Job printing.....	5.25
9768	Thos. Brennan Lumber Co.....	Lumber.....	35.00
9769	The Schwartz Decorating Co.....	Painting and paper, Union Park.....	25.00
9770	St. Paul Foundry Co.....	Beams, etc., McCarron Lake vestibule.....	5.73
9771	D. L. Bell.....	Est. No. 1, cement.....	398.89
9772	The Crane & Ordway Co.....	Hose and valves.....	57.79
9773	D. L. Bell.....	Cement and lime.....	16.45
9774	Farwell, Ozmun, Kirk & Co.....	Nails, tools.....	20.60
9775	Foley Bros. & Kelly Mercantile Co.....	Soap and cardles.....	8.05

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LIST OF VOUCHERS.—Continued.

AUGUST, 1898.—Continued.

No. of Voucher.	NAME.	CLAIM.	Amount.
9776	N. W. Engineering Co.	Electric wire and lamps	29.80
9777	Ogden, Merrill & Greer	Lantern fixtures	2.53
9778	Allen & Co.	Livery	4.00
9779	F. W. Luley & Son	Tallow	1.00
9780	Adam Decker & Co.	Screws	.88
9781	Boeringer & Son	Repairing levels	.35
9782	Fred Swanson	Painting pumps	18.00
9783	The Globe Co.	Advertising	8.00
9784	Andrew Johnson	Overflow privilege reservoir	25.00
9785	The Barney Building, M. M. Steffy, agent	Electric light for office	15.00
9786	Chas. H. Klein	Est. No. 1, brick	890.78
9787	Martin Feist	Lunch for men cleaning conduit	3.50
9788	Thos. Brennan Lumber Co.	Est. No. 1, lumber	700.47
9789	The Western Supply Co.	Jute packing, etc.	11.85
9790	N. W. Fuel Co.	Est. No. 11, fuel	919.88
9791	W. H. Viall	Hauling coal, Vadnais	16.96
9792	Estate of Jas. Gillilan	Rent of storage lot	25.00
9793	Martinson & Sundberg	Brick conduit, est. No. 1, Pleasant Lake	270.13
9794	P. H. Thornton	Est. No. 3, pipe laying	649.37
9795	South Park Foundry and Machine Co.	Est. No. 4, valves	352.25
9796	South Park Foundry and Machine Co.	Est. No. 5, special castings	75.85
9797	John Fitzgerald, superintendent of workhouse	Two dozen brooms	4.00
9798	St. Paul Rubber Co.	Hip rubber boots	14.95
9799	The Breen Stone Co.	Cut stone for gate house, Pleasant Lake	121.00
9800	St. Paul Cartage Co.	Est. No. 2, drayage	128.75
9801	J. H. Schurmeier Wagon and Carriage Co.	Sharpening tools	1.56
9802	E. A. Boyd	Hauling piles to Pleasant Lake	25.53
9803	Jas. Shiely	Hauling rock to Pleasant Lake	200.00
9804	Gribben Lumber Co.	Doors, windows, frames	175.00
9805	A. K. Barnum & J. B. Hewitt, executors	Refunded frontage tax	67.53
9806	G. M. Wing	Transcribing evidence, Wenzel vs. Board	177.72
9807	Gribben Lumber Co.	Lumber for meter boxes	17.63
9808	Chas. Klein	Est. No. 2, brick	68.25
9809	N. W. Lime Co.	Est. No. 1, Portland cement	166.50
9810	P. R. L. Hardenbergh & Co.	Leather for meter washers	3.30
9811	South Park Foundry and Machine Co.	Est. No. 6, special castings	16.20
9812	Portland Stone Co.	Cement tile vestibule, McCarron	15.95
9813	St. Paul Sash, Door and Lumber Co.	Boxes for fire hydrants	7.56
9814	Francis P. Corning, J. W. White, attorney	Frontage tax refunded	7.50
9815	De Cou & Co.	Wire screen railing for pump houses	29.95
9816	N. W. Stamp Works	Rubber stamps	3.90
9817	Cornplanter Oil Co.	Oil and Gasoline	13.97
9818	The Samuel Carmen Printing Co.	Printing 1,000 postals, etc.	5.50
Total			\$45,559.33



## LIST OF VOUCHERS.—Continued.

SEPTEMBER, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9810	C. L. Horst, city treasurer.....	Pay roll for August, 1898.....	\$5,158.38
9820	C. L. Horst, city treasurer.....	Interest due Oct. 1, 1898, on bonds.	25,000.00
9821	Fairbanks, Morse & Co.....	Est. No. 5 and final, pipe laying.	
		1897.....	31.48
9822	Fielding & Shepley.....	Relaying pavement.....	18.58
9823	Geo. J. Mitsch Drug Co.....	Supplies.....	5.60
9824	Viscosity Oil Co.....	Cylinder oil.....	21.00
9825	Daniel Cashill.....	Horseshoeing.....	4.00
9826	M. F. Kennedy & Bros.....	Oars and rowlocks, Lake Phalen...	1.80
9827	C. F. Schunemann.....	Gate readings.....	23.00
9828	Chas. Friend & Son.....	Buggy straps.....	.40
9829	J. N. Forcier.....	Board and stabling.....	12.40
9830	A. Decker & Co.....	Hardware.....	34.01
9831	Standard Underground Cable Co....	Telephone line wire for pump house	39.75
9832	H. C. Boyeson Stationery Co.....	Stationery.....	3.70
9833	Estate of James Giffillan.....	Rent of storage lot.....	25.00
9834	Michigan Brass and Iron Works.....	2-inch automatic brass valves.....	100.00
9835	C. L. Horst, city treasurer.....	Refunded on water for street sprinkling.....	8.40
9836	Wycoff, Seamans & Benedict.....	Typewriter supplies.....	3.85
9837	Mitsch Wagon and Carriage Co.....	Blacksmithing.....	6.15
9838	N. W. Engineering Co.....	Soldering salt and tape.....	.70
9839	T. L. Blood & Co.....	Paint.....	13.58
9840	The Edward P. Allis Co.....	Rubber valves, Vadnais pump.....	7.00
9841	Scribner & Libby Co.....	Smoke stack for Vadnais Lake.....	6.00
9842	Schroeder & Weyh.....	Blacksmithing.....	3.90
9843	P. N. Lindquist.....	Horseshoeing.....	4.00
9844	D. L. Bell.....	Est. No. 2, cement.....	219.18
9845	Craig Oil Co.....	Kerosene oil.....	4.42
9846	Brown, Treacy & Co.....	Stationery.....	8.01
9847	Griggs Bros.....	Hay and oats.....	58.97
9848	J. H. Schurmeier Wagon and Carriage Co.....	Blacksmithing.....	1.44
9849	Foley Bros. & Kelly Mercantile Co..	One box Star candles.....	3.60
9850	Jacob Koch.....	Horseshoeing.....	3.00
9851	Farwell, Ozmun, Kirk & Co.....	tools and hardware.....	13.17
9852	H. P. Rugg & Co.....	Pipe and fittings.....	14.21
9853	Crane & Ordway Co.....	Hose, pipe fittings, etc.....	25.28
9854	Cornplanter Oil Co.....	Gasoline.....	1.40
9855	Robinson & Cary Co.....	Tools.....	25.36
9856	St. Paul Foundry Co.....	Special castings.....	8.41
9857	John Martin Lumber Co.....	Lumber.....	28.30
9858	J. G. Duggan.....	Sharpening tools, etc.....	18.80
9859	The Barney Building.....	Electric light for office.....	7.50
9860	St. Paul Lime and Cement Co.....	Sewer pipe.....	1.00
9861	St. Paul Stone Co.....	Cement tile.....	.90
9862	P. H. Thornton.....	Est. No. 4, pipe laying.....	501.97
9863	Hennessy & Cox.....	Repairing asphalt paving.....	10.73
9864	Gribben Lumber Co.....	Lumber.....	111.91
9865	Volkzeitung Printing and Pub. Co..	Advertising.....	1.80
9866	Dispatch Printing Co.....	Advertising.....	7.50
9867	Pioneer Press Co.....	Advertising.....	5.40
9868	The Globe Co.....	Advertising.....	4.50
9869	Jno. Caulfield.....	Postage, express, etc.....	73.38
9870	Pittsburgh Meter Co.....	Est. No. 5, meters.....	800.00
9871	M. F. Brennan.....	Livery.....	10.00
9872	W. H. Viall.....	Hauling coal to Vadnais station...	19.62
9873	N. W. Fuel Co.....	Est. No. 12, fuel.....	121.03
9874	John Calender.....	Step ladder for McCarron station..	3.50
Total.....			\$32,625.97

## LIST OF VOUCHERS.—Continued.

OCTOBER, 1898.

No. of Voucher.	NAME.	CLAIM	Amount.
9875	C. L. Horst, city treasurer.....	Pay roll for September, 1898.....	\$4,972.22
9876	Carl Taylor.....	Legal expenses, Wenzel et al. vs. Board.....	29.50
9877	Pioneer Press Co.....	Job printing.....	99.25
9878	Gribben Lumber Co.....	Lumber.....	18.89
9879	Scribner & Libby Co.....	Roll felt.....	93
9880	Pittsburgh Meter Co.....	Water meters.....	1,600.00
9881	H. M. Smythe Printing Co.....	Job printing.....	21.20
9882	Henry T. Vayinger.....	Services, Rice Lake.....	21.95
9883	G. F. Austin.....	Services, Rice Lake.....	11.50
9884	National Meter Co.....	Meter fittings.....	5.57
9885	South Park Foundry and Machine Co.	Hydrant valves repaired.....	17.60
9886	South Park Foundry and Machine Co.	Est. No. 7, special castings.....	25.52
9887	Northwestern Shot and Lead Works..	Six coils $\frac{3}{4}$ ex. strong lead pipe.....	53.24
9888	N. W. Lime Co.....	Est. No. 2, cement.....	18.48
9889	N. W. Lime Co.....	One barrel headed lime.....	.90
9890	Griggs Bros.....	Hay.....	19.84
9891	Estate of Jas. Giffillan.....	Rent of storage lot.....	25.00
9892	Watson & Howard.....	Insurance, Vadnais Lake.....	4.80
9893	Viscosity Oil Co.....	Cylinder oil.....	21.84
9894	Western Electric Co.....	Lamps and brushes.....	8.50
9895	Geo. J. Mitsch & Co.....	Flaxseed.....	1.90
9896	Joseph N. Forcier.....	Board and stabling.....	21.39
9897	Allen & Co.....	Livery.....	10.00
9898	Union Brass and Metal Manuf'g Co.	Brass works.....	16.10
9899	D. L. Bell.....	Mortar color.....	10.00
9900	D. L. Bell.....	Est. No. 3, cement.....	107.35
9901	Adam Decker & Co.....	Tools.....	5.79
9902	Thos. Brennan Lumber Co.....	Est. No. 1, lumber.....	159.69
9903	C. F. Schunemann.....	Ten days' use of horse and buggy.....	10.00
9904	P. N. Lindquist.....	Horseshoeing.....	2.00
9905	Chas. Friend & Son.....	Repairing saddle.....	.25
9906	Daniel Cashill & Co.....	Horseshoeing.....	7.00
9907	J. G. Duggan.....	Sharpening tools.....	2.95
9908	The Samuel Carmen Printing Co.....	Job printing.....	7.25
9909	H. E. Wedelstaedt & Co.....	Stationery.....	4.11
9910	H. C. Boyeson Stationery Co.....	Stationery.....	3.25
9911	The Western Supply Co.....	Pipe fittings, etc.....	23.62
9912	Jacob Koch.....	Horseshoeing.....	2.00
9913	H. P. Rugg & Co.....	Pipe and stop, and waste cocks.....	40.90
9914	Robinson & Cary Co.....	Block tin.....	38.70
9915	Wycoff, Seamans & Benedict.....	Typewriter supplies.....	4.60
9916	Thos. Brennan Lumber Co.....	Lumber.....	2.43
9917	J. H. Schurmeier Wagon and Carriage Co.....	Sharpening tools.....	2.34
9918	Brown, Treacy & Co.....	Stationery.....	16.53
9919	The Crane & Ordway Co.....	Pipe fittings.....	20.03
9920	Farwell, Ozmun, Kirk & Co.....	Powder.....	4.07
9921	Foley Bros. & Kelly Mercantile Co.	Candles, etc.....	4.10
9922	Noyes Bros. & Cutler.....	Rosin.....	.38
9923	Ogden, Merrill & Greer.....	Lamp fixtures.....	.92
9924	T. L. Blood & Co.....	Paint, etc.....	9.68
9925	Tierney & Co.....	Feed (bran).....	.48
9926	Cornplanter Oil Co.....	Oil and Gasoline.....	24.19
9927	M. F. Brennan.....	Livery.....	10.50
9928	Nicols & Dean.....	Hardware.....	7.17
9929	C. L. Horst, city treasurer.....	Interest due Nov. 1, 1898.....	8,750.00
9930	W. H. Viall.....	Hauling coal to Vadnais Lake.....	17.53
9931	P. H. Thornton.....	Est. No. 5, pipe laying.....	497.95
9932	St. Paul Cartage Co.....	Est. No. 3, drayage.....	22.62
9933	Martinson & Sundberg.....	Est. No. 2, conduit, Pleasant Lake.	89.25
9934	Fairbanks, Morse & Co.....	Pressure gauge.....	2.70
9935	John Martin Lumber Co.....	Lumber.....	8.44
9936	N. W. Fuel Co.....	Est. No. 13, coal, etc.....	947.84
9937	John Caulfield.....	Bills paid per vouchers attached..	45.50
9938	H. Vitt.....	Board of men.....	3.34
9939	Fielding & Shepley.....	Relaying pavement.....	153.05
9940	The Crane & Ordway Co.....	Est. No. 1, and final.....	444.07
9941	John Caulfield.....	Expense to water works convention	97.41
Total .....			\$18,638.16



## LIST OF VOUCHERS.—Continued.

NOVEMBER, 1898.

No. of Voucher.	NAME.	CLAIM.	Amount.
9942	C. L. Horst, city treasurer.....	Interest due Dec. 1, 1898.....	\$7,000.00
9943	Viscosity Oil Co.....	Cylinder oil.....	21.00
9944	American Hoist and Derrick Co.....	Pile driver, head block, etc.....	9.40
9945	H. M. Smyth Printing Co.....	1,000 No. 10 envelopes.....	3.00
9946	F. W. Luley & Son.....	Beef tallow.....	1.60
9947	Gribben Lumber Co.....	Lumber.....	35.26
9948	Board of Fire Commissioners.....	200 feet condemned hose.....	40.00
9949	South Park Foundry and Machine Co.....	Making screw for 36-inch sluiceway	5.41
9950	The Dispatch Printing Co.....	Advertising coal bids.....	3.57
9951	Pioneer Press Co.....	Job printing and blank books.....	75.50
9952	E. G. Smith.....	Analyses of water.....	62.50
9953	Howard-Harrison Iron Co.....	Est. No. 2, iron pipe.....	1,212.18
9954	Robert W. Hunt & Co.....	Inspecting pipe.....	24.68
9955	Justus Kahlert.....	Repairs, electric plant, McCarron..	4.00
9956	John B. Cook & Son.....	Livery.....	10.00
9957	E. G. Krahmer.....	Recording map.....	2.00
9958	Henry Bucher.....	Services as witness.....	8.80
9959	South Park Foundry and Machine Co.....	Special castings.....	20.04
9960	Booklage & Stille.....	Sharpening picks.....	3.45
9961	C. H. Klein.....	Estimate on brick.....	146.25
9962	Rome G. Brown, attorney for Anton Wenzel et al.....	In full, as compromise, Wenzel et al. vs. Board, for alleged damages.....	1,600.00
9963	C. L. Horst, city treasurer.....	Pay roll for October, 1898.....	4,434.28
9964	Pioneer Press Co.....	Meter bill slips.....	4.75
9965	Cunningham Printing Co.....	Job printing.....	8.75
9966	H. C. Boyeson Stationery Co.....	Stationery.....	1.45
9967	The People's Ice Co.....	Ice.....	9.00
9968	Joseph N. Forcier.....	Board and stabling.....	8.80
9969	George J. Mitsch & Co.....	Supplies.....	3.69
9970	The Barney Building, M. M. Steffy, agent.....	Light for office.....	15.00
9971	C. F. Schunemann.....	Rent of horse and buggy.....	5.00
9972	Fielding & Shepley.....	Relaying pavement.....	62.19
9973	Brown, Treacy & Co.....	Stationery.....	18.78
9974	St. Paul Foundry Co.....	Iron work intake, Pleasant Lake.....	20.30
9975	Union Brass and Metal Manuf'g Co.....	Bolts for service boxes.....	30.18
9976	Foley Bros. & Kelly Mercantile Co.....	Matches and candles.....	8.10
9977	N. W. Stamp Works.....	Seals.....	.25
9978	Cornplanter Oil Co.....	Oil and gasoline.....	22.25
9979	Chas. Nitz Coal and Wood Co.....	Est. No. 1, fuel.....	59.00
9980	Jacob Koch.....	Horseshoeing.....	2.00
9981	J. H. Schurmeier Wagon and Carriage Co.....	Sharpening tools.....	1.64
9982	Standard Oil Co.....	Engine oil.....	8.70
9983	Chas. Friend & Son.....	Set harness and repairs.....	20.50
9984	Nicols & Dean.....	Iron.....	3.23
9985	T. L. Blood & Co.....	Oil and turpentine.....	1.24
9986	Daniel Cashill & Co.....	Horseshoeing.....	4.00
9987	J. G. Duggan.....	Sharpening tools.....	2.75
9988	P. N. Lindquist.....	Horseshoeing.....	2.00
9989	Boeringer & Son.....	Drawing paper.....	.57
9990	H. P. Rugg & Co.....	Bushings, waste, etc.....	8.53
9991	M. F. Brennan.....	Livery.....	2.00
9992	Adam Decker & Co.....	Sash.....	.29
9993	Allen & Co.....	Livery.....	5.00
9994	Robinson & Cary Co.....	Hydrant paint, etc.....	26.90
9995	Farwell, Ozmun, Kirk & Co.....	Ropes, nails, steel lamp, etc.....	27.50
9996	Crane & Ordway Co.....	Lead and iron pipe, pressure regulator, etc.....	125.33
9997	The Western Supply Co.....	Pipe fittings.....	9.34
9998	Tierney & Co.....	Bran.....	.76
9999	Pittsburgh Meter Co.....	Est. No. 7, meters.....	492.00
10000	P. H. Thornton.....	Est. No. 6, pipe laying.....	528.85
10001	St. Paul Cartage Co.....	Est. No. 4, drayage.....	28.62
10002	Jameson & Hevener.....	Oats.....	49.00
10003	Estate of James Gilfillan.....	Rent of lot 15, block 9, St. Paul	
		Proper, storage lot.....	25.00
10004	John Caulfield, secretary.....	Bills paid per voucher.....	44.66
10005	The Flush Tank Co.....	Service boxes.....	307.10

## LIST OF VOUCHERS.—Continued.

NOVEMBER, 1898.—Continued.

No. of Voucher	NAME.	CLAIM.	Amount.
10006	Leon F. Dupree.....	Personal services.....	10.00
10007	Gribben Lumber Co.....	Est. No. 1, final.....	202.01
10008	W. H. Viall.....	To hauling coal, Vadnais Lake....	23.10
10009	N. W. Fuel Co.....	Est. No. 14 and final.....	211.48
10010	South Park Foundry and Machine Co.	Est. No. 9, specials.....	30.55
10011	South Park Foundry and Machine Co.	Manhole covers.....	16.50
10012	Frank C. Scott.....	Land for right of way, Centerville Lake .....	100.00
10013	South Park Foundry and Machine Co.	Hydrant caps.....	46.25
10014	D. F. Reese, clerk supreme court....	Clerks' fees.....	7.50
10015	The Schwartz Decorating Co.....	Painting gate house, Pleasant Lake	28.00
10016	Hennessey & Cox.....	Relaying pavement.....	152.48
10017	Martin Felst.....	Board of men testing pumps.....	71.70
10018	D. F. De Wolf.....	Hay .....	23.22
10019	The Ludlow Valve Manufacturing Co.	One 30-inch valve.....	185.00
10020	Robt. W. Hunt & Co.....	Est. No. 3 and final, testing pumps	300.00
Total .....			\$18,134.77

## LIST OF VOUCHERS.—Continued.

DECEMBER, 1898,

No. of Voucher.	NAME.	CLAIM.	Amount.
10021	C. L. Horst, city treasurer.....	Pay roll for November.....	\$4,294.07
10022	Brown, Freney & Co.....	Printing paper book, Wenzel case..	233.57
10023	Nimis & Nimis.....	25 electric lamps.....	7.14
10024	C. E. Green, register of deeds.....	Recording deeds, abstract, etc., Anoka.....	16.00
10025	Viscosity Oil Co.....	Cylinder oil.....	43.26
10026	John Kenny.....	Repairing boiler, McCarron Lake..	5.00
10027	St. Paul Foundry Co.....	Cast iron boxes.....	10.08
10028	Fielding & Shepley.....	Relaying pavement.....	6.45
10029	The Samuel Carman Printing Co.....	1,000 copies deposit slips.....	4.00
10030	The Brennan Lumber Co.....	Lumber.....	33.24
10031	Griggs Bros.....	Hay.....	53.33
10032	E. A. Seuffert.....	Painting two smoke stacks.....	22.00
10033	Pioneer Press Co.....	Job printing.....	6.75
10034	P. H. Thornton.....	Est. No. 6, pipe laying.....	678.10
10035	Kavanaugh & Co.....	Stone pipe.....	3.00
10036	Scribner, Libby & Co.....	Machine work.....	41.56
10037	C. L. Horst, city treasurer.....	Investment sinking fund.....	6,500.00
10038	St. Paul Cartage Co.....	Est. No. 5, final, drayage.....	90.97
10039	Franklin Machine Works.....	Brass box for pile driver.....	2.30
10040	The Flush Tank Co.....	Service boxes.....	153.55
10041	Union Brass and Metal Manuf'g Co.	Brass goods.....	20.58
10042	H. C. Boyeson Stationery Co.....	Stationery.....	8.40
10043	Lovering Shoes Co.....	Repairing rubber boots.....	1.50
10044	Wycoff, Seamans & Benedict.....	Typewriter supplies.....	4.56
10045	H. E. Wedelstaedt & Co.....	Stationery.....	2.53
10046	Estate of Jas. Gillfillan.....	Rent of storage lot.....	25.00
10047	Cunningham Printing Co.....	Job printing.....	2.50
10048	P. N. Lindquist.....	Horseshoeing.....	4.00
10049	Daniel Cashill & Co.....	Horseshoeing.....	4.00
10050	Prendergast Bros.....	Sheet iron fixtures.....	3.00
10051	Moorhead & Horrigan.....	Livery.....	5.00
10052	J. G. Duggan.....	Sharpening tools, etc.....	9.40
10053	John Olson.....	Earth for filling on Reaney street..	7.50
10054	M. M. Steffy, agent, the Barney Bldg.	Light for office.....	7.50
10055	St. Paul Foundry Co.....	Repair centrifugal pump.....	2.52
10056	St. Paul Rubber Co.....	Hip rubber boots, intake.....	15.76
10057	Farwell, Ozmun, Kirk & Co.....	Hardware.....	17.37
10058	The Crane & Ordway Co.....	Lead and iron pipe fittings.....	159.35
10059	C. W. Hackett Hardware Co.....	Galvanized wire, etc.....	7.48
10060	Robinson & Cary Co.....	Rubber belt, etc.....	17.58
10061	The Western Supply Co.....	Plumbers, furness, etc.....	4.28
10062	Nicols & Dean.....	Iron, etc.....	12.90
10063	J. H. Schurmeler Wagon and Carriage Co.	Tools, etc.....	2.28
10064	Ogden, Merrill & Greer.....	Lantern, fixtures, etc.....	1.84
10065	H. P. Rugg & Co.....	White waste.....	7.09
10066	George J. Mitsch & Co.....	Flaxseed meal.....	2.00
10067	M. F. Brennan.....	Livery.....	2.50
10068	Emil Geist.....	Relettering dial clock.....	2.40
10069	John B. Cook.....	Busses to pump test.....	32.00
10070	Chas. Freind & Son.....	Boot for horse.....	.50
10071	Adam Decker & Co.....	Hardware.....	.45
10072	Mitsch Wagon and Carriage Co.....	Repairing buggy.....	4.05
10073	Foley Bros. & Kelly Mercantile Co.	Candles, lye, etc.....	8.90
10074	Cornplanter Oil Co.....	Oil and gasoline.....	10.55
10075	Fred Leyde.....	Rent of pumping engine at intake..	23.80
10076	Chas. Nitz Coal and Wood Co.....	Est. No. 2, fuel.....	165.72
10077	D. L. Bell.....	Portland cement.....	3.25
10078	Joseph N. Forcier.....	Straw for covering wells, etc.....	40.95
10079	South Park Foundry and Machine Co.	One 30-inch cast sleeve.....	17.11
10080	John Martin Lumber Co.....	Fencing for Centerville.....	63.00
10081	Jacob Koch.....	Horseshoeing.....	2.00
10082	N. W. Shot and Lead Works.....	Pig lead.....	38.00
10083	Fred Schroeder.....	Livery to pump test.....	36.50
10084	Schroeder & Weyh.....	Sand picks.....	4.50
10085	John Caulfield, secretary.....	Bills paid per voucher.....	51.25
10086	The E. P. Allis Co.....	Est. No. 3, final, pump.....	9,789.33
10087	Michael Dupre, Jr.....	Right of way, Peltier Lake.....	100.00
Total .....			\$22,906.04
Grand total.....			\$302,956.72

## SUPERINTENDENT'S REPORT.

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ST. PAUL, MINN., Jan. 1, 1899.

*To the Board of Water Commissioners,*

GENTLEMEN: I herewith submit my annual report for work done, by and under your direction, for the year 1898.

The accompanying tables, from No. 1 to No. 18, inclusive, show in detail the amount and character of work done, and other statistical matter relating to mains, hydrants, valves, etc.

### WATER MAINS LAID DURING THE YEAR 1898.

10,060 lineal feet of water pipe laid on high service.  
 1,366 lineal feet of water pipe laid on high service, West Side.  
 2,135 lineal feet of water pipe laid on low service.

13,570 total lineal feet, or 2.57 miles, of new mains.  
 712 lineal feet of mains relaid.

14,282 lineal feet. Making a total of new mains laid and old mains relaid of 2.7 miles.

The number of fire hydrants placed during the year.....	19
The number of valves placed during the year.....	26
The number of street sprinkling stand pipes placed during the year.	3
Service connections put in.....	530
New meters placed during the year.....	1.055
Automatic fire extinguishers placed during the year.....	4

### FIRE HYDRANTS.

There were nineteen (19) fire hydrants placed during the year, making a total of twenty-two hundred and sixty-eight (2268) that are now in service.

### FIRE HYDRANT REPAIRS.

There were six hundred and thirty-six (636) hydrants upon which a repair of some kind was done during the year. In referring to the number of hydrants repaired, a "repair" is considered whenever it is found



necessary to repack, take off and clean top nuts, or replace broken parts, or any leak. By reason of the favorable condition of the weather during the winter months, there were only six (6) affected by frost during the past year.

#### STREET SPRINKLING STAND PIPES.

There have been three (3) new street sprinkling stand pipes placed during the year, making a total of two hundred and ninety-four (294) placed and ready for service. There were three hundred and sixteen (316) separate items of repairs during the year, one-third of which was for replacing hose on cross arm of stand pipe, about one-fifth was for replacing valves worn out, and there were twenty (20) which were affected by frost. The remainder of repairs were for miscellaneous items, incident to their general maintenance.

I desire to call your attention to the use of these stand pipes during the winter months by parties who have the privilege of filling cisterns. It has been the custom heretofore to remove the top valves on cross arm and close the valve at base of riser every fall, the pressure remaining on the lower valve, and, when stand pipe is used, what water remains in the riser is supposed to waste at the bottom; but it frequently does not, by reason of the character of the soil into which the water is discharged. It then freezes, resulting in the two (2) inch riser, and sometimes the valve, being destroyed. This all could be avoided by shutting off all the stand pipes at the mains as soon as practicable in the fall, excepting certain ones, within properly laid out districts, a list of which could be furnished the parties using them, and then if any damage is done to them within the districts, through neglect of closing the valves or otherwise, the cost of repairs could be collected from the proper person.

#### REPAIRS ON MAINS.

There have been sixteen (16) leaks repaired on mains during the year. The small number of leaks speaks for itself as to the character of material used and workmanship done in the laying of the entire system up to date.

#### VALVES PLACED AND REPAIRED.

There have been twenty-six new valves placed during the year, making a total of twenty-one hundred and twenty-four (2124) up to date. There have been thirty-one (31) valves repaired, the nature of which was generally due to rust forming in the working parts of the gates, and in other cases when packing in stuffing box had to be replaced.

#### AUTOMATIC FIRE EXTINGUISHERS.

There were four (4) four-inch connections put in for automatic fire extinguishers, making a total of thirty-two (32) having been put in up to date.



## SERVICE PIPE CONNECTIONS.

There have been five hundred and thirty (530) service pipe connections put in during the year, making a total up to date of 15,742. The repairs on service due to leaks has been comparatively small, there having been only fifty-one (51) during the year. There were five hundred twenty-four (524) stop boxes that required attention and repairs; the work consisted of replacing broken parts, raising, lowering and changing the location of some, by reason of grading and boulevarding streets.

## TEMPORARY MAINS.

There were two thousand and twenty-one (2,021) lineal feet of temporary mains laid during the year, making a total up to date in service of 11,341 lineal feet, ranging in size from three-fourths-inch to two-inch. These mains are abandoned whenever the permanent pipes are laid on the streets.

## MAINS RELAID.

During the year the old sixteen-inch cement pipe on Locust street, between Eighth and Tenth streets, was removed and cast iron pipe substituted. There still remains in the city cement water mains in use which were included in the original purchase. The amount and location are as follows:

	Four-inch.	Six-inch.	Sixteen-inch.
Broadway, from Ninth street west to Grove street .....	.....	1,000 feet	.....
Canada street, from Ninth to Spruce street .....	.....	700 feet	.....
Canada street, from Norris to Grove... ..	.....	175 feet	.....
Spruce street, from Pine to Broadway..	200 feet	.....	.....
Pine street, from Van Slyke court to Spruce street .....	200 feet	.....	.....
Monroe place, from Grove to Woodward	250 feet	.....	.....
Lake Phalen main north of Fauquier street .....	.....	.....	5,400 feet
Total .....	650 feet	1,875 feet	5,400 feet

I would recommend that the four-inch and six-inch mains be replaced as soon as practicable. The six-inch main on Broadway will have to be laid this year, as the street is going to be paved. The six (6) inch main on Summit avenue, between Wabasha and St. Peter streets, was lowered to the standard depth just previous to the street being paved. This work was done by days' labor at a cost of twenty-nine cents per lineal foot.

## DISTRIBUTING SYSTEM.

In my last year's report reference was made to the changing of a portion of a district from Vadnais lake, low service, to Phalen lake supply, which then extended from Broadway to Jackson street, and between Grove street on the north and Seventh street on the south. During the year the district was extended up to Cedar street. Also, all that portion of the city lying between De Soto street and the St. Paul & Duluth Railroad Company's right of way, and between North street and Fauquier street, has been changed from the Lake Phalen supply to high service.

The practical result of these changes, so far as relating to the house services, hydrants, mains, etc., up to the present time, is as follows:

There were 296 services, 13,785 lineal feet of mains and 26 fire hydrants changed from Lake Phalen supply to high service north of Brunson's addition.

There were 465 services, 19,262 lineal feet of mains and 35 fire hydrants changed from low service, Vadnais, to Lake Phalen supply, west of Broadway.

It also means that the Lake Phalen system is required to furnish water for all purposes for an additional area of about eleven acres, and that high service has to furnish water for an additional area of eighty-two acres in extent north of Brunson's addition.

## McCARRON LAKE PUMPING STATION.

By the purchase and erection of the ten (10) million gallon pumping engine from E. P. Allis & Co. of Milwaukee, Wis., there has been expended about ten thousand dollars (\$10,000) more than the contract price for the pump. This was caused by an additional thirty-inch suction main from the terminal chamber to the pump house; also in the rearranging and enlarging of the pipe system for the suction and discharge lines, together with specials, more boiler capacity, etc.

The entire cost of installing the pumping engine, together with all the other work connected therewith, itemized as follows, was \$38,866.19.

E. P. Allis Company.....	\$28,700.00
Thirty-inch suction main from terminal chamber to pump house.....	4,141.21
Special castings and pipe at pump house.....	1,540.28
Lead, yarn and miscellaneous items.....	375.72
Material used in foundation of new pump.....	1,273.32
Sewerage, rearranging floors, electric light extension.....	399.83
New boiler erected.....	1,223.00
Steam fittings for new boiler and rearranging old one.....	235.46
Labor for September, 1897, to Sept. 1, 1898.....	1,813.04
Inspecting the construction of engine at factory and testing after erection.....	850.00
	<hr/>
	\$40,551.86
Less amount charged to Allis Company.....	1,685.67
	<hr/>
Total .....	\$38,866.19

## CANALS.

Wilkinson Lake Canal—As per order of the Board dated June 27, 1898, there has been constructed one thousand lineal feet of wooden flume, being a continuation of the one that was built in 1897, along the west shore of the lake. This flume is seven by four feet, inside dimensions, made of dressed and matched lumber, and was built at a cost of ten hundred thirty-nine dollars and forty-seven cents (\$1039.47), being about one dollar and four cents (\$1.04) per lineal foot. Work was completed Aug. 11, 1898.

Peltier and Centerville Lake Canal—On Oct. 3, 1898, the Board ordered this canal to be excavated between the lakes; also, on Nov. 18, 1898, they ordered the right of way to be fenced. The total cost of this improvement was three hundred and seventy-four dollars and thirty seven cents (\$374.37), reported in detail to the Board Dec. 23, 1898. Work was completed and water turned into Centerville lake from Peltier lake on November seventeenth (17th), 1898.

The canal between Vadnals and Sucker lakes had been filled up to such an extent that the water was held back in Sucker lake, a foot or so above its proper height. The canal was lowered and the sides trimmed up wherever required. In connection with this matter, I would say that the bottom of stone arch culvert under the county road opposite G. Moosbrugger's property should be lowered about one foot, as it acts as a dam to the water coming from Sucker lake, and I recommend that it be done at once. The approximate cost will be about one hundred dollars (\$100).

## PLEASANT LAKE IMPROVEMENT.

As per your order of May 27, 1898, I was authorized to make this improvement by doing the work by day labor. This improvement consists of the following work: An open canal, extending from Sucker lake to a point 2,054 feet north to Pleasant lake. It is eight and ten feet in width at the bottom, with the usual slopes, requiring the handling of 2,100 cubic yards of excavation; 1,213 lineal feet of brick and concrete conduit with a timber foundation; a brick gate house, thirty-one by twenty-one feet; 469 lineal feet of thirty-six-inch cast iron pipe for an intake pipe out into Pleasant lake.

The estimated cost of this improvement was ninety-four hun-

dred dollars .....	\$9,400.00
By work done which was not included in the approximate estimate, by reason of the thirty-six-inch intake being extended 160 feet further out into the lake, and the putting of reserve gate on intake; also, other miscellaneous work, in all amounting to .....	1,767.91
Total corrected estimate would have been.....	\$11,167.91

The actual cost of the work was as follows:

The canal .....	\$517.48
Brick conduit .....	4,258.36
Gate house .....	2,682.32
Intake pipe .....	3,769.03
Total .....	\$11,227.19
Actual cost of work in excess of corrected estimate.....	\$109.28

It appears from the above statement that the thirty-six-inch intake pipe cost about eight dollars and three cents (\$8.03) per foot, while the Centerville intake pipe for same size pipe and somewhat similar condition cost \$8.07 per lineal foot.

#### RIGHT OF WAY.

The only additional land acquired by the Board during the year was a strip of land fifty feet wide between Centerville and Peltier lakes for canal purposes. There was a change in the alignment of the right of way between Pleasant and Sucker lakes, upon which work for the so-called Pleasant lake improvement was done.

The wagon road, which is partly on land controlled by the board on the south shore of the west arm of Vadnais lake, was opened up, and a small amount expended to put it in a passable condition. This was done for the purpose of shortening the length of haul in delivering the coal to and from the station by way of Rice street.

#### BUILDINGS AND GROUNDS.

During the year there was an addition built to the dwelling located on property of the Board at No. 409 Fairview avenue. This work cost, including the painting and repairing of old buildings, the sum of five hundred and thirty dollars (\$530), which details of cost were reported to the Board Dec. 23, 1898.

The brick addition made to the front of the McCarron lake pumping station was for the purpose of making a vestibule for the main entrance and providing a proper place for the telephone service. This work cost nine hundred ninety-five dollars and sixty cents (\$995.60), which details of cost were reported to the Board Dec. 27, 1898.

#### SUMMARY OF RECOMMENDATIONS.

In the recommendations of work to be done this year I have included some of what was mentioned in my last year's annual report, and such other work as it has occurred to me should be suggested for your consideration:

Relay what cement mains are now in use with cast iron pipe, excepting Lake Phalen supply, which amounts to 2,520 lineal feet of six-inch pipe.

Lay a main on Maryland street, from Courtland to McMenemy street, as a cross feeder from high service to supply Dayton's Bluff and Arlington Hills. The necessity of this is very apparent, as the districts above referred to depend solely on the sixteen-inch main on Grove and Seventh streets, and if an accident should occur to this main practically all the eastern and northern portion of the city would be out of water until repaired. The damage and annoyance incident to a break (if it should occur) is a risk that the board is assuming, which I think should be removed by ordering the work done this year.

Blow-off on Vadnais lake conduit near waste weir B.

Iron fence around high service reservoir.

Lower the channel of stone arch culvert on the Vadnais and Sucker lake canal where it crosses under the county road near Moosbrugger's property.

Brick building for Vadnais lake pumping station.

Condemn a right of way and construct a canal between Otter and Bald Eagle lakes.

Put in and connect up with the public sewers blow-off pipes at all dead ends where there are dividing gates between the systems.

The charge made by the department for putting in temporary mains is not sufficient. The flat rate heretofore made of twenty cents per lineal foot, without regard to the size of the pipe put in, operates to the disadvantage of the department, and I would suggest that the charges be made according to the size of pipe put in, as follows: For three-quarter-inch galvanized iron pipe, twenty cents per lineal foot; for one-inch pipe, twenty-five cents per lineal foot; for one-and-one-quarter-inch pipe, thirty cents per lineal foot; for one-and-one-half-inch pipe, thirty-five cents per lineal foot, and for two-inch pipe, forty cents per lineal foot. And I would recommend the discontinuance of the laying of these temporary mains except in localities where it is very apparent that permanent mains would not be laid, and as a further reason of the unfairness of permitting one property owner having the privilege and benefit of water service without paying water frontage tax, while probably the adjacent property owner is compelled to pay.

For convenience in referring to the various tables, I have arranged them as follows:

No. of Table.	Subject.	Description of Subject.
1.	Mains.	Laid on high service during the year 1898.
2.	Mains.	Laid on low service during the year 1898.
3.	Mains.	Laid on west side high service during the year 1898.
5.	Mains.	Transferred from Phalen to high service in 1898.
6.	Mains.	Transferred from Vadnais to Phalen in 1898.
11.	Mains.	Location and size of all on high service Jan. 1, 1899.



12. Mains. Location and size of all on low service Jan. 1, 1899.
13. Mains. Location and size of all on west side high service Jan. 1, 1899.
4. Mains. Summary of all sizes and mileage in the city Jan. 1, 1899.
7. Hydrants. Fire, placed during the year 1898.
17. Hydrants. Fire, location and number of all up to Jan. 1, 1899.
7. Hydrants. Fire, summary as to districts.
8. Hydrants. Sprinkling, placed during the year 1898.
18. Hydrants. Sprinkling, location and number of all up to Jan. 1, 1899.
9. Valves. Placed during the year 1898.
10. Valves. Summary as to sizes, etc., up to Jan. 1, 1899.
14. Valves. Total number and location on high service Jan. 1, 1899.
15. Valves. Total number and location on low service Jan. 1, 1899.
16. Valves. Total number and location on west side high service Jan. 1, 1899.
19. Inventory. Stock on hand, pipes, specials, gates and hydrants.

Respectfully submitted,

A. R. STARKEY,  
Superintendent.

TABLE NO. 1

## PIPE LAID ON HIGH SERVICE DURING THE YEAR 1898.

DATE.	Street.	From.	To.	4-Inch.	6-Inch.	20-Inch.	24-Inch.	30-Inch.
April 30.	Force main.....	At McCarron pumping station.				60	46	70
May 20.	Geranium.....	Payne av.....Greenbrier av			697			
May 25.	Geranium.....	Arcade.....Mendota			640			
June 4.	Frances.....	Mendota.....Forest			663			
June 15.	McLean av.....	Earl.....Hester			643			
July 11.	Geranium.....	Mendota.....Forest			680			
July 11.	Forest.....	Geranium.....48 feet southerly			48			
July 19.	Sherburne av.....	Lexington.....Dunlap			612			
July 22.	Taylor av.....	Charlotte.....Aldine			431			
July 28.	Ellis.....	Raymond.....Territorial road			523			
July 30.	Summit court.....	Summit av.....Alley in Sum. ct.	260					
Aug. 5.	Bradford.....	Endloott.....75 feet easterly			75			
Aug. 16.	Reaney.....	St. P. & D. R. R.....						
		Greenbrier av			241			
Sept. 1.	Suction main.....	At McCarron pumping station.						771
Sept. 16.	Frank.....	Margaret.....Minnehaha			652			
Sept. 23.	Geranium.....	Cypress.....Forest			639			
Oct. 22.	Marion.....	Atwater.....Front			1,296			
Oct. 28.	Arkwright.....	Jessamine.....Magnolia			327			
Oct. 28.	Magnolia.....	East of Arkwright.....			19			
Nov. 1.	Rose.....	Greenbrier.....Walsh			433			
Nov. 3.	Reaney.....	Present term.....Greenbrier av			240			
Total.....				260	8,862	60	46	841
Total 4-inch pipe.....				260				
Total 6-inch pipe.....				8,862				
Total 20-inch pipe.....					60			
Total 24-inch pipe.....						46		
Total 36-inch pipe.....							841	

Total on high service..... 10,069 feet, or 1.907 miles.

154 feet of 24-inch suction main has been relaid with 36-inch pipe.

30 feet of 20-inch force main has been taken up.

30 feet of 20-inch force main has been abandoned.

70 feet of 24-inch force main has been taken out.

TABLE NO. 2.

## PIPE LAID ON LOW SERVICE DURING THE YEAR 1898.

DATE.	Street.	From.	To.	6-Inch.
June 22.	Roble.....	Stryker.....	Winslow	328
June 30.	W. Winifred.....	143 ft. w. of w. line of Bellows, Charlton		510
Oct. 25.	Pennsylvania av.....	17 ft. e. of w. l. of Columbia, 300 ft. w. l. of		300
Nov. 20.	James.....	Bay.....	Warsaw	587
Dec. 17.	Harrison av.....	Lawton.....	Goodrich	410
Total.....				2,135

Total on low service, 2,135 feet, or 0.404 miles.

Locust, from Eighth to Tenth, has been relaid with 524 feet 10-inch castiron pipe.

TABLE NO. 3.

## PIPE LAID ON WEST SIDE HIGH SERVICE DURING THE YEAR 1898.

DATE.	Street.	From	To.	6-Inch.
June 28.....	Ohio.....	Cherokee .....	Alice .....	415
Aug. 4.....	Smith av.....	Baker .....	Morton .....	342
Sept. 9.....	Smith av.....	Stevens .....	George .....	362
Sept. 19.....	George.....	Smith avenue. 40 feet west of	Manomin .....	247
Total .....				1,366

Total on West Side high service, 1,366 feet, or 0.2587 miles.

TABLE NO. 4.

SUMMARY OF WATER PIPE LAID IN THE CITY OF ST. PAUL,  
JAN. 1, 1899.

SYSTEM.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.	Total Feet.	Total Miles.
High Service.....	38,807	571,692.9	.....	120,874	87,188	84,224	15,317	10,075	9,100	889,277.9	168.4238
Low Service.....	85,754	180,924.5	6,782	50,640	38,067	8,842	8,765	16,436	18	351,678.5	66.6058
W.S. High Service.....	.....	34,504.0	.....	7,219	3,950	.....	.....	.....	.....	50,678.0	6.7562
Total.....	74,561	783,121.4	6,782	178,733	129,205	44,566	24,082	26,511	9,118	1,276,629.4	241.7858

Total 4-inch pipe.....	74,561
Total 6-inch pipe.....	783,121.4
Total 8-inch pipe.....	6,732
Total 12-inch pipe.....	178,733
Total 16-inch pipe.....	129,205
Total 20-inch pipe.....	44,566
Total 24-inch pipe.....	24,082
Total 30-inch pipe.....	26,511
Total 36-inch pipe.....	9,118

Grand total.....1,276,629.4 feet, or 241.7858 miles.

TABLE NO. 5.

MAINS TRANSFERRED FROM LAKE PHALEN SERVICE TO HIGH  
SERVICE IN 1898.

Street.	From.	To.	4-Inch.	6-Inch.
Bradley .....	Beaumont .....	Minnehaha .....	498	.....
Belford .....	North .....	Minnehaha .....	.....	1,327
Beaumont .....	De Soto .....	Payne .....	.....	1,841
Burr .....	Collins .....	Fauquier .....	.....	1,645
Collins .....	Lafayette .....	Bedford .....	.....	1,016
Decatur .....	Bedford .....	Beaumont .....	.....	710
De Soto .....	North .....	Collins .....	.....	273
Edgerton .....	Minnehaha .....	Reency .....	.....	328
Fred .....	Burr .....	Bedford .....	337	.....
Jessie .....	Minnehaha .....	Fauquier .....	.....	634
Minnehaha .....	De Soto .....	Payne .....	.....	1,707
North .....	De Soto .....	Bedford .....	.....	851
Payne av.....	Beaumont .....	Omaha R. R. ....	.....	1,162
Preble .....	Beaumont .....	Minnehaha .....	.....	411
Reency .....	Edgerton .....	St. Paul & Duluth R. R. ....	.....	905
Total .....			835	12,560

Total 4-inch mains transferred. 835 feet.

Total 6-inch mains transferred, 12,950 feet.

TABLE NO. 6.

MAINS TRANSFERRED FROM VADNAIS LAKE SYSTEM TO LAKE  
PHALEN SYSTEM IN 1897 AND 1898.

		Street.	From Street to Street.	4- Inch.	6- Inch.	8- Inch.	12- Inch.
Transferred in 1897.	{	Norris.....	Temperance to Canada.....	761			
		Spruce.....	Sibley to Canada.....	323			
		Tenth.....	Jackson to Broadway.....				1,324
		Ninth.....	Jackson to Broadway.....		1,300		
		Eighth.....	Jackson to Broadway.....			1,300	
		Temperance.....	Eighth to Grove.....	1,200			
		Sibley.....	Seventh to Spruce.....	1,291			
		Wacouta.....	Seventh to Spruce.....	750			294
		Canada.....	Ninth to Grove.....		1,200		
		Eleventh.....	Cedar to Jackson.....		1,238		
Transferred in 1898.	{	Tenth.....	Cedar to Jackson.....	441	730		
		Ninth.....	Cedar to Jackson.....		1,150		
		Eighth.....	Cedar to Jackson.....	830	820		
		Minnesota.....	Seventh to Twelfth.....	1,420			
		Robert.....	Seventh to Twelfth.....		1,660		
		Jackson.....	Seventh to Twelfth.....				1,660
		Total .....				6,596	8,068
Total		4-inch main.....	6,586				
Total		6-inch main.....	8,068				
Total		8-inch main.....	1,300				
Total		12-inch main.....	3,274				
Total .....			19,262				

TABLE NO. 7.

## HYDRANTS PLACED IN 1898.

No.	LOCATION.	Service.	Double or Single Steamer.	Size of Pipe.	Pressure at Hydrant.
2250.....	Geranium and Mendota, n. w. cor.....	High.....	Single.....	6-inch.....	48
2251.....	McLean av. and Hester, n. w. cor.....	High.....	Single.....	6-inch.....	54
2252.....	Ohio and Cherokee av., s. w. cor.....	W. S. high.....	Single.....	6-inch.....	98
2253.....	Roble and Winslow av., n. w. cor.....	Low.....	Single.....	6-inch.....	22
2254.....	Winifred and Charlton, n. e. cor.....	Low.....	Single.....	6-inch.....	15
2255.....	Sherburne av. and Dunlap, n. e. cor.....	High.....	Single.....	6-inch.....	43
2256.....	Taylor av. and Aldine, n. w. cor.....	High.....	Single.....	6-inch.....	30
2257.....	Smith av. and Morton, n. w. cor.....	W. S. high.....	Single.....	6-inch.....	44
2258.....	Reaney, near Hamm railroad tracks.....	High.....	Single.....	6-inch.....	73
2259.....	Smith av. and George, n. w. cor.....	W. S. high.....	Single.....	6-inch.....	62
2260.....	Smith av. and Stevens, n. w. cor.....	W. S. high.....	Single.....	6-inch.....	55
2261.....	Geranium and Cypress, n. w. cor.....	High.....	Single.....	6-inch.....	40
2262.....	Marion and Wayzata, n. w. cor.....	High.....	Single.....	6-inch.....	65
2263.....	Marion and Milford, n. w. cor.....	High.....	Single.....	6-inch.....	67
2264.....	Marion and Atwater, n. w. cor.....	High.....	Single.....	6-inch.....	68
2265.....	Pennsylvania av., 283 ft. w. of Columbia.....	Low.....	Single.....	6-inch.....	20
2266.....	Rose and Greenbrier, n. e. cor.....	High.....	Single.....	6-inch.....	46
2267.....	James and Bay, n. e. cor.....	Low.....	Single.....	6-inch.....	34
2268.....	Harrison and Goodrich, n. w. cor.....	Low.....	Single.....	6-inch.....	34

New hydrants, placed during the year 1898 on high service.....	10
New hydrants, placed during the year 1898 on low service.....	5
New hydrants, placed during the year 1898 on W. S. high service.....	4
Total for the year.....	19

Hydrant No. 1385 has been moved to Geranium and Forest, northwest corner.  
Twenty-six hydrants have been changed from low service to high service.

DISTRICTS.	Double Steamer.	Single. Steamer.	Total No. of Hydrants in Each District.
Low service, Lake Phalen.....	16	107	123
Low service, lake Vadnais.....	119	494	613
High service, reservoir.....	11	1,426	1,437
High service, West Side.....		95	95
Total .....	146	2,122	2,268

TABLE NO. 8.

## STREET SPRINKLING HYDRANTS PLACED IN 1898.

No.	Location.	Measurement of Valve from Standpipe.
292	Milton and Iglehart, northwest corner.....	43 feet south; 7 feet east.
293	Front, west of Grotto, north side.....	8 feet.
294	Chatsworth and Front, northwest corner.....	9 feet east; 37 feet south.
No. 119	has been moved from Minnehaha and Burr to Osceola and Pleasant, northeast corner .....	3 feet.
No. 155	has been moved from Grotto and Holly, southerly on Grotto, 20 feet north of alley in block 14.....	28 feet.
No. 136	Como and Elfelt, moved some.....	34 feet west, 13 feet north.
No. 227	Front, east of Grotto, north side, moved 290 feet easterly .....	7 feet.
No. 242	has been moved from Front and Colne to Victoria and Front, northwest corner .....	8 feet.
No. 60	has been moved from Cedar and Aurora to Aurora and Cedar.....	48 feet east, 7 feet south.
No. 277	has been moved northerly on St. Albans to 20 feet north of alley in block 6.....	178 feet south, 5 feet east.
No. 128	Cedar and Fifth, has been reset.....	6 feet.
No. 66	Locust and Ninth, has been reset.....	7 feet.
Number placed this year.....		3
Total placed to date.....		294



TABLE NO. 9.

## VALVES PLACED IN 1898.

Street.	LOCATION.	4-inch.	6-inch.	30-inch.
Bradley.....	2½ feet north of south line of North.....		1	
Robie.....	East line of Winslow.....		1	
Winifred.....	East line of Charlton.....		1	
Harrison av.	East line of Lawton.....		1	
Ohio.....	North line of Alice.....		1	
Smith av.....	South line of Baker.....		1	
Beaumont.....	West line of Burr.....		1	
Bradley.....	South line of Minnehaha.....	1		
Ellis.....	West line of Raymond.....		1	
Forcemain.....	At McCarron pumping station.....			1
Forcemain.....	By-way to above gate.....		1	
Frances.....	East line of Mendota.....		1	
Frank.....	North line of Margaret.....		1	
Frank.....	North line of Beech.....		1	
Geranium.....	West line of Greenbrier.....		1	
Geranium.....	East line of Arcade.....		1	
Geranium.....	East line of Forest.....		1	
Marion.....	South line of Front.....		1	
McLean av.....	East line of Earl.....		1	
Reaney.....	East line of Greenbrier.....		1	
Sherburne av.....	West line of Lexington.....		1	
Summit ct.....	South line of Summit av.....	1		
Suction main.....	At McCarron pumping station.....			1
Suction main.....	By-way to above gate.....		1	
Suction main.....	Blow-off at McCarron station.....		1	
Taylor av.....	East line of Aldine.....		1	
Total .....		2	22	2

Total on low service..... 4  
 Total on W. S. high service..... 2  
 Total on high service..... 20

Total ..... 26  
 Two 4-inch and twenty 6-inch valves have been transferred from low service to high service.

TABLE NO. 10.

## TOTAL NUMBER OF VALVES ON ALL SYSTEMS JAN. 1, 1899.

SIZES IN INCHES.	Low Service.	High Service.	West Side, High Service.	Total.
3 inches.....	15	23		38
4 inches.....	113	115		228
6 inches.....	436	950	40	1,426
8 inches.....	20	2		22
12 inches.....	70	137	8	221
16 inches.....	37	67	5	109
20 inches.....	10	33		43
24 inches.....	5	9		14
30 inches.....	5	6		11
36 inches.....	1	5		6
Total .....	724	1,347	53	2,124

TABLE NO. 11.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
HIGH SERVICE TO JAN. 1, 1899.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Arlington...	Greenbrier to Payne...	650							
Arundel...	Summit to Lafond...	2553							
Ashland...	Western to Oxford...		7203						
Aurora...	Robert to Chatsworth...		7814						
Arcade...	Third to Rose...		1070	5382					
Astoria...	St. Anthony to Milwaukee to Jackson...		275						
Argyle...	Front to Van Slyke...	370	831						
Albemarle...	Atwater to Front...	1293							
Arch...	100 feet west of Colum- bia to Jackson...		1725						
Atlantic...	Fauquier to Stillwater...		1785						
Atwater...	Rice to Sylvan...		1142						
Agate...	Cortland to Jenks...		2437						
Avon...	Dayton to Martin...	1381							
Asbury...	Van Buren to Blair...		307						
Arkwright...	Jessamine to Magnolia...		327						
Beaumont...	De Soto to Payne...		1881						
Bedford...	North to Minnehaha...		1327						
Bradford...	Hampton to 75 feet east of Endicott...		894						
Bradley...	North of Maryland...		256						
Bradley...	Beaumont to Minnehaha...	498							
Bates...	Murray to Hastings...		376	3035					
Beech...	Seventh to Duluth...		3738						
Blair...	Western to Fairview...		4610						
Broadway...	Thirteenth to Mt. Airy...		407	533					
Burr...	Collins to Brainerd...		5183						
Hurgess...	At Dale and at Como...		114						
Bayless av.	Raymond to Langford Park...				2935				
Bayless pl.	Raymond to Bayless av.	502							
Burns...	Mound to Griffith...		2753						
Blake...	Raymond to Langford P. P. E.		282		186				
Beacon...	University to Shields...	594							
Buffalo...	Capitol to Granite...		631						
Canada...	University to Valley...		290						
Capitol...	Mississippi to Fairview...		6866						
Carroll...	Rice to Cleveland...		13202						
Cedar...	Summit to Como...		2486						
Central av.	East line of Central Park to Rice...	557	1254						
Cent'l P. Pl. E. and W.	Summit to Central...	1209							
Charles...	Rice to Vandalia...		10235.3						
Capitol boul.	University to Como...		1076						
Cable...	Seventh to Margaret...			650					
Cook...	Forest to Rice...		8967						
Conway...	Earl to Maria...		3727						
Churchill...	Front to Van Slyke...	1103	1283						
College...	Rice to Third...		1185						
Como boul.	East line of lot 4, block 5, to north line of lot 5, block 1, Warrendale...		666						
Como av.	Park to Dale...				469	6555			
Chelton...	Prior to Tatum...		559						
Cherry...	200 feet west of Hoffman to Maria...	230	565						
Case...	Forest to Terrace...		345	6551					
Claghorn...	Lafond to Van Buren...		628						
Cypress...	North of Euclid...	45							
Cromwell...	Manvel to Cudworth...		1509						
Cudworth...	Bayless to Eustis...		985						
Clark...	Whitall to Case...		1308						
Cross...	Argyle to Lexington...		966						

## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Cambridge..	Princeton to Lincoln.....		1060						
County rd..	Langford to Dooley.....				256				
Crocus pl..	Goodrich to Fairmount.....	1314	983						
Chatsworth..	Evergreen to Van Slyke.....			3411					
Cleveland..	Lincoln to University.....				3313				
Cortland....	Capitol to Maryland.....		252		4600				
Cayuga.....	Mississippi to Cortland.....		1630						
Carter.....	West line lot 31, block 46, to County road.....		1886						
Collins.....	Lafayette to Bedford.....		1016						
Dale.....	Fairmount to Reservoir.....	4800		2110	5280	1453	14500	9234	1500
Dayton.....	Third to Cleveland.....	192	11578	4675					
Duluth.....	Seventh to Omaha Ry.....		434						
Dayton pl..	West to Maria.....	275							
Dawson.....	Arcade to Gotzian.....		3673						
Dooley.....	County road to 15 feet east of Raymond.....		1327						
De Soto....	North to Lawson.....		3783						
Decatur....	Bedford to Beaumont.....		710						
Earl.....	Burns to Cook.....			3693	2291				
Edmund....	Rice to Milton.....		8518						
Eichenwald..	Sixth to Seventh.....		532						
Euclid.....	Maple to Earl.....		2391						
Elfelt.....	Charles to Blair.....	1064							
Everett ct..	Wheeler to Great North- ern Ry.....		355						
Edgerton...	Minnehaha to Maryland.....		328	4272					
Ellis.....	Territorial ro. to Hamp- den.....		1841						
Fuller.....	Rice to Lexington.....		8548.3						
Farrington..	Summit to Lafond.....		3459						
Fauquier....	290 feet east of Atlantic to Greenbrier.....		6153						
Fifth.....	125 feet east of Hoffman to Maple.....		1543						
Floral.....	Summit to Oakland.....	518							
Fourth.....	Terry to 400 feet west of Maria.....		5342						
Front.....	Sylvan to Lexington.....		1140	10475	12	12			
Fairmount..	Dale to Milton.....		2931	518					
Fairview st.	Valley to 200 feet north of Mt. Airy.....		578						
Feronia.....	Fairview to Prior.....		1378						
Fremont....	Earl to Arcade.....		2577						
Fairview av.	Selby to Capitol.....			2542	1971				
Fry.....	Territorial rd. to Capitol.....	1087	6						
Frank.....	Margaret to Minnehaha.....		652						
Frances....	Mendota to Cypress.....		1927						
Fred.....	Hurr to Bedford.....	337							
Forest.....	Conway to 48 feet south of Geranium.....		3161						
Forcemain..	Pumphouse to Reservoir.....					7886	46	70	7386
Flandrau...	Harvester to Stillwater.....		595						
Grand.....	Lawton to Cretin.....		8865						
Grove.....	Seventh to Pine.....				2618				
Grotto.....	Lincoln to Lafond.....		4594						
Goodrich...	782 feet east of Dale to Oxford.....		5358						
Greenbrier..	Arlington to Magnolia.....	512	342						
Gaultier...	Sherburne to Cook.....		2730						
Gordon.....	Raymond to Carter.....		1387		983				
Genesee....	Mississippi to Buffalo.....		814						
Granite.....	Mississippi to Cortland.....		1622						
Geranium...	Hurr to Cypress.....		4575						
Hoffman....	Clearmont to Seventh.....		2946						
Holly.....	Western to Victoria.....		5287						
Hague.....	Dale to Griggs.....		6512						
Hudson.....	Cypress to Maria.....		2389		184				
Hastings...	Bates to Hester.....			8066					
Hewitt.....	Aldine to Syndicate.....		4541						

## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4 Inch.	6-Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Hope.....	Fourth to Seventh.....		1156						
Hampden....	Raymond to Hersey.....		1733						
Harvester....	White Bear to Hazel.....			1306					
Hazel.....	Harvester to 300 feet north of Ames.....			980					
Horton.....	Van Slyke to Como boul.....		419						
Hardenbergh Place.....	Lytton place to Atwater.....	349							
Iglehart.....	Wabasha to Cleveland.....		14708						
Jackson.....	Viola to Sycamore.....		236	2237	145				
Jay.....	St. Anthony to Fuller.....		656						
Jenks.....	Forest to Cortland.....		6084						
Jessamine....	Rice to Cypress.....		8830						
Jessie.....	Minnehaha to Maryland.....		3269						
Knapp.....	Langford to Raymond.....		1838						
Keston.....	Dooley to Dowell.....		924						
Kent.....	Portland to Carroll.....	2201							
Kenwood Pk	St. Albans around said park.....		787						
Laura.....	Waltham to University.....		1211						
Laurel.....	Nina to Fisk.....		8297						
Lawton.....	Grand to Summit.....		480						
Lawson.....	Earl to Rice.....		8686						
Lincoln.....	Oakland to Finn.....		8390						
Louis.....	Nelson to Fuller.....		2122						
Linden.....	Mt. Airy to Arch.....		606						
Lafond.....	Rice to Milton.....		7340						
Lynnhurst E. and W. Lexington.....	University to Feronia.....		1850						
Langford P. P. E.....	Grand to Van Slyke.....				3818				
Langford P. P. W.....	Bayless to Knapp.....		415		427				
Langford av.	Bayless to Gordon.....		181	670					
Lookout pl.	Scudder to Dooley.....			1236	838				
Litchfield....	Arkwright to Westminster.....		447						
Leslie.....	Rice to Sylvan.....		1142						
Lombard.....	Victoria to Chatsworth.....		1256						
Linwood pl.	Milton, 454 feet west.....		454						
Lytton pl.	Oseola to Lexington.....		2621						
Lake Como & Phalen av.	Rice to Sylvan.....		1142						
Mackubin....	At Dale street.....			23					
Maple.....	Summit to Edmund.....		5708						
Margaret.....	Hastings to Seventh.....		2060	811					
Martin.....	Gotzian to Greenbrier.....		4762						
Maria.....	Central to Milton.....		7739						
Marshall....	River to North.....		5481						
Magnolia....	Western to 300 feet west of Cleveland.....		2640	10106					
Marion.....	120 feet east of Mississipp to Cypress.....		5717						
Minnehaha....	University to Front.....		2938						
McLean.....	Duluth to Tatum.....		6071	7473					
Mendota.....	Maria to Hester.....		1896						
Mt. Airy.....	Hudson to Fauquier.....		655	3286					
Maryland....	L'Orient to Robert.....		2024						
Mound.....	Dale to Arcade.....		3856	22					
Milwaukee....	Hastings to 335 feet west of Earl.....		1298	1536					
Manvel.....	Merriam Park to Astoria.....		570						
Mulberry.....	Robbins to Raymond.....		1142						
Milford.....	Third to Sixth.....	435							
Minneapolis.	Rice to Woodbridge.....		655						
McMenemy....	At Dale.....			18					
Mississippi.	Case to Jessamine.....			1652					
	Great Northern Ry. to Cayuga.....		1136						

## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6 Inch.	12-Inch.	16-Inch.	20 Inch.	24 Inch.	30 Inch.	36-Inch.
Manitoba...	Rice to Sylvan.....		1139						
Macalester...	Summit to Princeton.....		1885						
Mt. Ida.....	De Soto to Rivoli.....		535						
Milton.....	Victoria to Lombard.....		336.5						
Nelson.....	Summit to Western.....		2422						
Nina.....	Summit to Selby.....		800						
North.....	De Soto to Seventh.....		1886						
Nourse.....	Gordon to N. P. Ry.....		392						
Oakland.....	Ramsey to Summit.....		3662						
Olive.....	Olmsted to Pennsylvania.....		1057						
Oakley.....	Lynnhurst west to Prior.....		451						
Osceola.....	Pleasant to Chatsworth.....		3709						
Otsego.....	Lafayette to Mt. Ida.....		791						
Park pl.....	Park drive southwest.....	574							
Park av.....	Martin to Cook.....		2084						
Princeton.....	Macalester to Baldwin.....		1399						
Pine.....	Grove to Pennsylvania.....		1820		387				
Portland.....	Summit to Victoria.....		3290						
Pennsylvania.....	Rice to Pine.....	505	342						
Preble.....	Beaumont to Minnehaha.....		471						
Payne.....	Beaumont to Ivy.....		6791						
Plum.....	Maple to Hoffman.....		1150						
Prior.....	Seby to University.....		804	3447					
Pascal.....	Minnehaha to Taylor.....		1743						
Pym.....	Hayless to Eustis.....			736					
Priscilla.....	Raymond avenue east.....		542						
Pratt.....	Raymond to Gibbs.....		762						
Phalen.....	Seventh to Stillwater.....			1457					
Pacific.....	Cypress to Hester.....		1260						
Pleasant.....	Osceola to St. Albans.....			560					
Poplar.....	N. P. R. R. yard to Cortland.....		859						
Rice.....	College to Jessamine.....		95	2147	5990	1154			
Robert.....	171 feet south of University to 254 north of same.....		425						
Rondo.....	Rice to Terrace Park av.....		10061						
Ramsey.....	Oakland to Summit.....		1259						
Ross.....	Atlantic to Seventh.....		2467						
Ravoux.....	Rondo to Fuller.....	618							
River.....	Maria to Hoffman.....	359							
Ravine.....	Maple to 344 feet west of Maria.....	1423							
Raymond.....	University to Langford.....		3205		1588				
Robbins.....	Hayless to Raymond Pk.....		440						
Reaney.....	Edgerton to English.....		7834						
Rose.....	Edgerton to Arcade.....		1930						
Sherb'ne av.....	Dunlap to Jackson.....	400	11082						
St. Anthony.....	Rice to Cleveland.....		13863						
St. Peter.....	College to University.....		2557						
Selby.....	Summit to Prior.....		17002						
Seventh.....	Grove to White Bear av.....				15025				
Sinnen.....	Sixth to Seventh.....		541						
Summit av.....	C. P. D. E. to Baldwin.....	913	5481	13384					
Summit pl.....	Nelson to Fuller.....		2122						
St. Albans.....	Pleasant to Martin.....	2306	300	556					
Sims.....	Edgerton to Earl.....		4539						
Sum'it ct.ay.....	East of Lawton.....		362						
Short.....	Maria to Hoffman.....		591						
Snelling.....	Goodrich to G. N. Ry.....				11195				
Simpson.....	Blair to Hewitt.....		1528						
Sixth.....	Hoffman to Arcade.....		2646						
Sixth.....	College to Summit.....		537						
Sidney.....	Raymond to Ellis.....		1225.5						
Scudder.....	Blake to Langford.....				1347				
St. Clair.....	Victoria to Oxford.....			1935					
Stinson.....	Gaultier to Western.....		1266						
Sycamore.....	Rice to Cortland.....			2509					
Syndicate.....	Lincoln to Summit.....		967						



## WATER MAINS ON HIGH SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Stillwater...	White Bear to Ames.....		906						
Summit st...	Alley to Summit.....	260							
Suction main	Pumphouse to Ter. ch'r.....						771	771	154
Taylor.....	Aldine to Holton.....		2898						
Tatum.....	Minnehaha to Chelton.....		541						
Third.....	Cypress to Summit.....	367	4449						
Thirteenth...	Pine to Broadway.....				778				
Tilton.....	Wabasha to Rice.....		1278						
Thomas.....	Como to Chatsworth.....		7605						
Topping.....	At Como and at Dale.....		118						
Territorial road.....	Raymond to Eustis.....		1498						
University...	Broadway to Cromwell.....		40	6387	3594	19164			
Valley.....	Broadway to Jackson.....				1789				
Viola.....	Jackson to Rice.....		1653						
Van Buren...	Western to Wheeler.....		6919						
Victoria.....	St. Clair to Hatch.....			375	9518				
Virginia.....	Summit to Como.....	2758	1798						
Vandalia.....	University, north of Charles.....		761.3						
Van Slyke...	Chatsworth to Lexington.....		1438						
Wabasha.....	Summit to Park.....	537	842						
Western.....	Summit to Como.....			1775	6285				
Williams.....	Olive to Mississippi.....		857						
Waltham.....	Laura to Prior.....	959							
Wayzata.....	At Albemarle.....		90						
Wilder.....	Iglehart to St. Anthony.....		1388						
Whitall.....	Payne to Clark.....		2301						
Walker.....	Hewitt to Great Northern Ry.....		807						
Wesley.....	Pascal to Fry.....	394	621						
Workhouse...	Around workhouse.....		1043						
Wheeler st...	Bayless to Everett.....			1012					
Westminster	Cayuga to Case.....		999						
Wheeler av...	University to Shields.....		588						
Woodbridge...	Atwater to Front.....		1297						
Winnipeg...	Rice to Sylvan.....		1142						
Wells, N. S...	Edgerton to Arcads.....		2090						
Wells, S. S...	From E. to W. end of retaining wall.....		1130						
White Bear...	Seventh to Ames.....			1992					
York.....	Forest to Cortland.....		5782						
Total .....		38807	571692.9	120874	87188	36224	15317	10075	9100

Total 4-inch pipe.....	38,807
Total 6-inch pipe.....	571,692.9
Total 12-inch pipe.....	120,874
Total 16-inch pipe.....	87,188
Total 20-inch pipe.....	36,224
Total 24-inch pipe.....	15,317
Total 30-inch pipe.....	10,075
Total 36-inch pipe.....	9,100

Total ..... 889,277.9 feet, or 168.4238 miles.

TABLE NO. 12.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
LOW SERVICE TO JAN. 1, 1899.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.
Alabama....	Crossing State.....		55						
Armstrong....	Duke to Chateworth.....		3825						
Arbor.....	Jefferson to Grace.....		595						
Audubon....	Seventh to Drake.....		745						
Ada.....	Robie to Winifred.....	334							
Anita.....	Concord—25 feet east.....	25							
Banfil.....	Smith to Duke.....	2302	687						
Bay.....	Stewart to Randolph.....		1944						
Becker pl....	Lafayette to De Soto.....		451						
Belvidere....	Andrew to Concord.....		1647						
Bradley.....	100 feet south of Grove to North.....		1503						
Bellows....	Winifred—25 feet north.....		25						
*Broadway....	Mississippi river to Uni- versity av.....	408	1735			1938		1741	
Bruno.....	East of Lafayette.....		47						
Bancroft....	Concord to Congress.....		935						
Bidwell....	Isabel to Congress.....		302						
Brunson....	Partridge to North.....		788						
Canada.....	Ninth to University.....		2055						
Cedar.....	Summit to Second.....		289	176	2573		614		
Chestnut....	Seventh to Washington.....		1235						
Colborne....	Jefferson to Superior.....		1763						
College.....	Cedar to Smith.....		1070						
Cross Miss. river.....	Broadway to State.....					1080			
Concord....	Isabel to Belvidere.....				6800				
Congress....	350 feet east of Bancroft to Charlton.....	392	6425						
Chicago.....	Wabasha to S. Robert.....		741						
Colorado....	R. R. to Parnell.....		1240						
Clinton.....	Congress to Winifred.....		403						
Columbia....	Glencoe to Pennsylvania.....		745						
Cliff.....	Goodhue to Smith.....		250.5						
De Soto.....	Hopkins to Becker pl.....		180		1540				
Douglas....	Seventh to Ramsey.....		1144						
Duke.....	Cascade to St. Clair.....		1893						
Dousman....	Von Minden to Goodhue.....		578						
Delos.....	Greenwood to Bellows.....		2911						
Daly.....	James to Jefferson.....		1060						
Dearborn....	Robert to Gorman.....		705						
Eagle.....	Spring to Seventh.....		1449						
Eighth.....	Wabasha—110 feet east of Neill.....	1425		3321					
Eleventh....	Cedar to Jackson.....		1238						
Elm.....	Exchange to C. M. & St. P. & R.....	406							
Exchange....	Wabasha to Wilk n.....	3062	323						
Eaton.....	At Indiana and Fairfield crossings.....		51			100			
Erie.....	St. Clair to Cascade.....		1807						
Emma.....	Western to Short Line.....	373							
Fairfield....	State to Wabasha.....		2812						
Fauquier....	Payne to De Soto.....				1082				
Fifth.....	Third to Kittson.....	1458	3120		2935				
Fort.....	Seventh to Tenth.....						1616		
Fourth.....	Exchange to 762 feet east of Kittson.....		4865		2079				
Fourteenth..	Broadway to Robert.....		1308						
Franklin....	Elm to Ninth.....	3308							
Fillmore....	Wabasha to State.....		2808						
Forbes.....	Wilkin to Douglas.....		1274						
Garfield....	Ramsey to Goodrich.....		1002						
Goodhue....	Cliff to Duke.....		2817						

\*Includes portion of Mississippi street south of Grove street.

## WATER MAINS ON LOW SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.
Goodrich...	Milwaukee Short Line to Richmond		1254		1763				
Grace.....	Seventh to Colborne		72						
Grove.....	Monroe to Jackson	133	1310				1544		
Glencoe....	Mississippi to Columbia		592						
George.....	State to Stryker				2625				
Goff.....	Wabasha to Winifred		105						
Greenwood..	Winifred to Congress		305						
Harrison av.	Douglas to Goodrich		2381						
Hopkins....	De Soto to Bradley		700						
Hall.....	George to Prospect ter.		2080						
Indiana....	State to Ethel				2462	2242			
Isabel.....	State to Charlton				5055				
Jackman....	Levee to University	40	1223		3179			108	
Jefferson...	Erie to Arbor		63		1171				
James.....	Bay to Webster		1526.5						
John.....	Third to Williams	889	2449						
June.....	View to Chatsworth		2130						
Kittson....	Fourth to Seventh		846						
Kittson's ad	Alley, block 4				222				
Kentucky...	Crossing State		55						
Lafayette...	Grove to De Soto				150	1915			
Lee.....	Seventh to Drake		1445						
Leach.....	Goodrich to Ramsey		1146						
Levee.....	Sibley to Jackson	340							
L'Orient....	Thirteenth to Minnehaha		2209						
Livingston..	Delos to Wood		580						
Lisbon.....	Douglas to Pleasant		973						
Logan.....	Bay to Canton		814						
Louisa.....	Robert to Gorman		701						
Locust.....						627	288		
McBoal....	Wilkin to Douglas		1301						
Magnolia...	Crossing Mississippi		18						
Market.....	Third to Fourth	250							
Minnesota..	Third to Twelfth	1484	1428						
Mississippi.	Grove to Overton		5165						
Monroe pl...	Grove to Woodward	300						8013	
Mt. Airy...	Mississippi to L'Orient		330						
Michigan...	Crossing Seventh		59						
Mayall alley	Seventh to Ninth	410							
Midway.....	Oakdale to Brown		1847						
Nash.....	Pine to L'Orient		698						
Neill.....	Seventh to Eighth	325							
Ninth.....	Neill to Smith	975	5187						
Norris.....	Canada to Temperance	791							
Nugent.....	St. Clair to C. M. & St. P. Short Line		513						
Olive.....	Sixth to Olmsted	236	1248						
Olmsted....	John to Pine		651						
Onelda....	Grace to 36 feet south of Seventh		634						
Ontario....	Washington to Spring	112							
Oakdale....	State to Midway		326			350			
Overton av..	Mississippi to terminal chamber								*8423
Patridge...	Bradley to De Soto	472							
Pine.....	Seventh to Olmsted	1261	979		132				
Plato.....	West of South Robert		18						
Pleasant...	Sixth to Goodrich		4834						
Prince.....	John to Broadway		825						
Pennsylvania	Mississippi to a point 300 feet west of Columbia		961						
Prescott....	Oakdale to Woodbury		1365						
Ramsey.....	Seventh to Pleasant		1352			307			
Randolph...	Webster to Milton		757		2818				
Richmond...	Seventh and Goodrich		90						
Robert.....	Elizabeth to Central		8881						
Rosabel....	Union depot grounds to Seventh		1598						

\*Also 18 feet 36-inch, Overton avenue, Mississippi to terminal chamber.

## WATER MAINS ON LOW SERVICE—Continued.

STREET.	FROM STREET TO STREET.	4-Inch.	6-Inch.	8 Inch.	12-inch.	16 Inch.	20-Inch.	24-Inch.	30-Inch.
Roble.....	Winslow to Andrew.....		2609						
St. Clair.....	Cliff to Colborns.....		945		112				
St. Peter.....	Third to College.....		2886						
Seventh.....	Duluth R. R. to Tuscarora.....	350	1000		470	15356	1708		
Second.....	East of Robert.....		18						
Sherman.....	Bluff to Pleasant.....		1937						
Sixth.....	Kittson to Pleasant.....	1896	2044	3235					
Sibley.....	Levee to Norris.....	1628	1462						
Smith.....	College to Cliff.....		3704						
Somerset.....	John to Pine.....		660						
Spruce.....	Sibley to Pine.....	683							
State.....	Mississippi river to West Side pump house.....					7704			
Summit.....	Robert to Cedar.....		859						
Stryker.....	George to Prospect ter.....		2108						
Stewart.....	Tuscarora to Bay.....		909						
Temperance.....	Eighth to Thirteenth.....	1509							
Tenth.....	Grove to College.....	441	1255		2280	139	1390		
Third.....	Pleasant to west end of Third street bridge.....		847		6648				
Thirteenth.....	Pine to Jackson.....		2075						
Thompson.....	Ramsey to Pleasant.....		545						
Twelfth.....	Jackson to Cedar.....					1274			
Toronto.....	Seventh to Jefferson.....		692						
Tennessee.....	Crossing State.....		51						
Tuscarora.....	Stewart to Milton.....		2624						
Van Slyke Court.....	Broadway to Olive.....	557							
Von Minden.....	Dousman to Western.....		897						
View.....	Seventh to Palace.....		2081						
Wacouta.....	Union Depot ground to Spruce.....	783	118		1736				
Walnut.....	100 feet south of I. P. to Pleasant.....	2420							
Warsaw.....	Audubon to Palace.....		1030						
Washington.....	Chestnut to Seventh.....	1047			1236				
Waverly pl.....	Lafayette to John.....		411						
Webster.....	Clay to Seventh.....		316						
Western.....	Milwaukee Ry to Pleasant.....		2550						
Westminster.....	Waverly place to N. P. Ry.....		1022						
Willis.....	Fifth to Seventh.....	550							
Wilkin.....	Short Line Ry. to Pleasant.....		1209						
Winifred.....	Charlton to Andrew.....		6097						
Whitney & Smith's ad.....	Alley, block 15.....		355.5						
Woodward.....	Bradley to John.....	683							
Wabasha.....	Goff to Summit.....		6965						
Watson.....	View to Chatsworth.....		2133						
Winslow.....	Isabel to Prospect ter.....		745						
Yankee.....	Seventh to Dousman.....	678							
Main old line	Fauquier to Lake Phalen.....					6000		7024	
Total.....		35754	186924.5	6732	50640	38067	8342	8765	16436
Total 4-inch pipe.....		35,754							
Total 6-inch pipe.....			186,924.5						
Total 8-inch pipe.....			6,732						
Total 12-inch pipe.....			50,640						
Total 16-inch pipe.....			38,067						
Total 20-inch pipe.....			8,342						
Total 24-inch pipe.....			8,765						
Total 30-inch pipe.....			16,436						
Total 36-inch pipe.....			18						

Total..... 351,078.5 feet, or 66.6058 miles.

There are 10,135 feet of tunnels for mains and 900 feet of tunnels for fire hydrants in the sand-rock district. Size of same, 6 feet in height and 3.5 feet in width, tapering towards top to 1.5 feet.

There are also 11 ventilating and riser shafts, and 49 hydrant shafts 7 feet in diameter at bottom and tapering towards top to about 2 feet. They are bricked from top of solid rock to a height of about 10 feet.

TABLE NO. 13.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON  
HIGH SERVICE, WEST SIDE, TO JAN. 1, 1899.

STREET.	FROM STREET TO STREET.	6- Inch.	12- Inch.	16- Inch.
Annapolis .....	At Manomin .....		100	
Alke .....	Ohio to the Park .....	141		
Baker .....	Bidwell to Cherokee .....		3,539	
Belvidere .....	South Robert to Oakdale .....	881		
Bidwell .....	Morton to Roble .....		346	362
Bunker .....	Oakdale to Brown .....	1,808		
Cherokee avenue .....	Annapolis to N. L. of Smith avenue .....	4,349		
Foros main .....	From Annapolis to Tank .....		100	
Curtice .....	Oakdale to 250 feet east of Woodbury .....	1,437		
George .....	Stryker to Smith avenue .....	3,581		
Hall avenue .....	Morton to Louisa .....	894		
Manomin .....	Baker to Annapolis .....		2,540	
Morton .....	Robert to Bidwell .....			2,672
Oakdale avenue .....	Midway to Curtice .....	1,319		
Orleans .....	Cherokee to Page .....	2,517		
Ohio .....	Winona to Cherokee .....	3,900		
Page .....	Robert to Harvard .....	1,344		170
Robert .....	Belvidere to Morton .....		594	606
Roble .....	Bidwell to Bellows .....	522		
State .....	Page to Pump House .....			140
Sidney .....	Ottawa to Cherokee .....	346		
Smith avenue .....	Morton to George .....	704		
Stryker avenue .....	Tyler to Augusta .....	791		
Totals .....		24,504	7,219	3,950
Total 6-inch pipe .....		24,504		
Total 12-inch pipe .....			7,219	
Total 16-inch pipe .....				3,950

Total ..... 33,673 feet or 6.7562 miles.



**TABLE NO. 14.**

### LOCATION OF VALVES (HIGH SERVICE).

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Arundel.....	North line of Summit.....									
Arundel.....	South line of Selby.....									
Arundel.....	North line of Dayton.....									
Arundel.....	North line of Marshall.....									
Arundel.....	North line of Charles.....									
Arundel.....	North line of Edmund.....									
Arundel.....	West line of Thomas.....									
Ashland.....	West line of Western.....									
Ashland.....	East line of Mackubin.....									
Ashland.....	East and west line of Dale.....									
Ashland.....	East line of Cresto.....									
Ashland.....	East and west line of Victoria.....									
Ashland.....	East line of Chatsworth.....									
Aurora.....	West line of Rice.....									
Aurora.....	East line of Jay.....									
Aurora.....	West line of Farrington.....									
Aurora.....	East and west line of Western.....									
Aurora.....	East line of Mackubin.....									
Aurora.....	East and west line of Dale.....									
Aurora.....	West line of Victoria.....									
Aurora.....	South line of University.....									
Arcade.....	North line of Dawson.....									
Arcade.....	North and south line of Seventh.....				1					
Arcade.....	North line of Minnehaha.....				1					
Arcade.....	South line of Omaha Ry.....				1					
Arcade.....	North line of Duluth Ry., B. O.....				1					
Arcade.....	North and south line of Case.....				2					
Arcade.....	South line of Magnolia.....				1					
Arcade.....	North line of Fauquier.....				1					
Arcade.....	154.5 feet south of Wells, H.....									
Astoria.....	South line of Van Buren.....									
Asbury.....	North line of St. Anthony.....									
Arch.....	West line of Mt. Vernon.....									
Arch.....	East line of Jackson.....									
Atlantic.....	North and south line of Seventh.....									
Atlantic.....	South line of Ross.....									
Atwater.....	East line of Rice.....									
Agate.....	East line of Cortland.....									
Agate.....	North line of Granite.....									
Agate.....	South line of York.....									
Avon.....	South line of Marshall.....			1						
Avon.....	North line of Itehart.....			1						
Avon.....	North line of Carroll.....			1						
Avon.....	North line of St. Anthony.....			1						
Arlington.....	East line of Payne.....			1						
Argyle.....	North line of Front.....			1						
Altamont.....	South line of Waxata.....			1						
Altamont.....	South line of Front.....			1						
Bates Ave.....	North line of Conway.....					1				
Bates Ave.....	South line of Seventh.....					1				
Beech.....	East and west line of Earl.....			2						
Beech.....	East line of Forest.....			1						
Beech.....	East line of Mendota.....			1						
Beech.....	South line of Seventh.....			1						
Blair.....	West line of Western.....			1						
Blair.....	East line of Mackubin.....			1						
Blair.....	East line of Dale.....			1						
Blair.....	East line of Aldine.....			1						
Blair.....	East line of Fairview.....			1						
Bradway.....	B. O., north line of Thirteenth.....	1								
Bradway.....	North line of Valley.....			1						
Brewster.....	North line of University.....			1						
Brewster.....	North line of Sherburne.....			1						
Burr.....	North line of Collins.....			1						
Burr.....	North line of Beaumont.....			1						
Burr.....	South line of York.....			1						
Burr.....	North and south line of Case.....			2						
Burr.....	South line of Laween.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Burr.....	North and south line of Maryland.....				2					
Burgess.....	West line of Como.....			1						
Burgess.....	East line of Dale.....			1						
Bayless ave.....	South line of Cudworth.....					1				
Bayless ave.....	Head of Bayless, P. on H.....			1						
Bayless ave.....	South line of Robbins, M. and H.....			1		1				
Bayless ave.....	North line of Tainter, on H.....			1						
Bayless pl.....	East line of Bayless ave.....			1						
Blake.....	East line of Scudder.....									
Blake.....	East line of Largford P. P. E. on H.....			1						
Burns ave.....	East line of Mound.....			1						
Burns ave.....	East and west line of Earl.....			2						
Beacon.....	South line of University.....		1							
Buffalo.....	North line of Capitol.....			1						
Buffalo.....	South line of Granite.....			1						
Bradley.....	North line of Beaumont.....			1						
Bradley.....	South line of Minnehaha.....			1						
Bradley.....	North line of Maryland.....			1						
Bradford.....	North line of Hampden.....			1						
Beaumont.....	West line of Burr.....			1						
Beaumont.....	East and west line of Bedford.....			2						
Beaumont.....	46 feet west of Payne ave.....			1						
Bedford.....	North line of North.....			1						
Bedford.....	South line of Minnehaha.....			1						
Canada.....	North line of University.....			1						
Canada.....	South line of Valley.....			1						
Capitol.....	West line of Mississippi.....			1						
Capitol.....	East line of Cortland.....			1						
Capitol.....	East and west line of Jackson.....			2						
Capitol.....	West line of Western.....			1						
Capitol.....	West line of Pascal.....			1						
Capitol.....	West line of Simpson.....			1						
Capitol.....	East and west line of Snelling.....			2						
Capitol.....	East line of Aldine.....			1						
Capitol.....	East line of Fairview.....			1						
Carroll.....	West line of Rice.....			1						
Carroll.....	East line of Louis.....			1						
Carroll.....	West line of Farrington.....			1						
Carroll.....	East and west line of Western.....			2						
Carroll.....	East line of Mackubin.....			1						
Carroll.....	East and west line of Dale.....			2						
Carroll.....	East line of Grotto.....			1						
Carroll.....	West line of Avon.....			1						
Carroll.....	East and west line of Victoria.....			2						
Carroll.....	West line of Snelling.....			2						
Carroll.....	East and west line of Fairview.....			2						
Carroll.....	East and west line of Prior.....			2						
Carroll.....	East line of Cleveland.....			1						
Conway.....	West line of Cypress.....			1						
Conway.....	East and west line of Mendota.....			2						
Conway.....	East line of Maple.....			1						
Conway.....	East and west line of Bates.....			2						
Cedar.....	North and south line of Central.....			2						
Cedar.....	North and south line of University.....			2						
Cedar.....	South line of Viola.....			1						
Central ave.....	East line of Cedar.....			1						
Central ave.....	West line of Wabasha.....			1						
Central ave.....	West line of St. Peter.....			1						
Central ave.....	East line of Rice.....			1						
Central, P.D.....										
E. & W.....	South of Central avenue.....		2							
Charles.....	West line of Rice.....			1						
Charles.....	West line of Gaultier.....			2						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	2-Inch.	4 Inch.	6 Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36 Inch.
Como.....	East line of Claghorn on H.....		1							
Como.....	South line of Lafond on H.....		1							
Como.....	East and west line of Gaultier, M. and H.....		1				1			
Como.....	East line of Elfelt on H.....		1							
Como.....	North line of Van Buren on H.....		1							
Como.....	North line of Minnehaha on H.....		1							
Como.....	West line of Virginia on H.....		1							
Como.....	East and west line of Western, M. and H.....		1				2			
Como.....	South line of Atwater, B. O.....			1						
Como.....	South line of Topping.....						1			
Como.....	East line of Dale.....						1			
Cherry.....	East line of Hoffman.....			1						
Cook.....	East and west line of Arcade.....			2						
Cook.....	West line of Greenbrier.....			1						
Cook.....	East line of Edgerton.....			1						
Cook.....	East and west line of McMenemy.....			2						
Cook.....	East line of Rice.....			1						
Cook.....	East line of Cortland.....			1						
College.....	West line of Sixth.....			1						
Collins.....	West line of Bedford.....			1						
Case.....	East and west line of Arcade.....				2					
Case.....	West line of Greenbrier.....				1					
Case.....	East and west line of Edgerton.....				1					
Case.....	West line of De Soto.....				1					
Case.....	West line of McMenemy.....			1						
Claghorn.....	South line of Blair.....			1						
Cromwell.....	North and south line of Pym.....			2						
Cudworth.....	West line of Langford.....			1						
Clark.....	North line of Whitall.....			1						
Clark.....	South line of Case.....			1						
Cross.....	West line of Argyle.....			1						
Cross.....	West line of Oxford.....			1						
Cross.....	East line of Lexington.....			1						
County road.....	South line of Dooley on H.....			1						
Crocus place.....	South line of Go-drich.....			1						
Crocus place.....	South line of Fairmount.....			1						
Chateworth.....	North line of Evergreen.....			1						
Chateworth.....	North line of Union.....			1						
Cleveland.....	South line of University.....					1				
Cleveland.....	South line of Myrtle on H.....			1						
Cleveland.....	South line of Wabash on H.....			1						
Cleveland.....	200 feet north of Mill Ry. on H.....			1						
Cleveland.....	South line of Gilbert on H.....			1						
Cleveland.....	North line of St Anthony.....					1				
Cleveland.....	Head of Rondo on H.....			1						
Cleveland.....	South line of Marshall.....				1					
Cleveland.....	South line of Laurel.....				1					
Cleveland.....	North and south line of Summit.....				2					
Cortland.....	North and south line of Sycamore.....			1		1				
Cortland.....	North line of Acate on H.....			1						
Cortland.....	North line of York on H.....			1						
Cortland.....	North line of Poplar on H.....			1						
Cortland.....	North line of Case on M. and H.....			1		1				
Cortland.....	North line of Jenks on H.....			1						
Cortland.....	North line of Lawson on H.....			1						
Cortland.....	At Cook on H.....			1						
Cortland.....	North line of Magnolia on H.....			1						
Cortland.....	North line of Jessamine on H.....			1						
Cortland.....	North line of Geranium on H.....			1						
Cortland.....	North line of Rose on H.....			1						
Cortland.....	South line of Maryland on H.....			1						
Carter.....	East line of Gordon.....			1						
Cayuga.....	West line of Mississippi.....			1						
Cayuga.....	East line of Acate.....			1						
Cayuga.....	East line of Cortland.....			1						
Chelton.....	West line of Tatum.....			1						
Churchill.....	North line of Front.....			1						
Churchill.....	North line of Hatch.....			1						
Churchill.....	South line of Cross.....			1						
Churchill.....	South line of Van Slyke.....			1						



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Cypress.....	North line of Euclid.....		1							
Cambridge..	South line of Lincoln.....			1						
Dale.....	South line of Goodrich.....				1					
Dale.....	North and south line of Summit.....				1	1				
Dale.....	B. O., at Grand.....	1								
Dale.....	At Ashland B. O.....	1								
Dale.....	North and south line of Marshall.....					2				
Dale.....	North and south line of University.....	1				1		1		
Dale.....	North line of Lafond.....	1								
Dale.....	North line of Minnehaha, M. & B. O.....		1					1		
Dale.....	South of Ireland.....	1								
Dale.....	In Great Northern R. R. yard on H.....		1							
Dale.....	North line of Great Northern Ry.....	1								
Dale.....	North and south line of Front, M. and B. O.....		1	3				3	2	
Dale.....	B. O., at Nigger Lake.....		2							
Dale.....	North line of Como and Phalen ave., B. O.....		1					1	1	
Dale.....	B. O., at German Lutheran cemetery.....		1							
Dale.....	Approach to reservoir, M. and B. O., M. H.....			4			2	1	1	
Dale.....	South line of Kansas.....	1		1						
Dayton.....	West line of Summit.....			1						
Dayton.....	East and west line of Western.....				2					
Dayton.....	East line of Mackubin.....				1					
Dayton.....	East and west line of Dale.....		1	1						
Dayton.....	East line of Grotto.....		1							
Dayton.....	West line of Avon.....		1							
Dayton.....	East and west line of Victoria.....		2							
Dayton.....	East line of Chatsworth.....		1							
Dayton.....	East and west line of Lexington.....		2							
Dayton.....	East line of Griggs.....		1							
Dayton.....	West line of Snelling.....		1							
Dayton.....	East line of Pierce.....		1							
Dayton.....	West line of Herschel.....		1							
Dayton.....	East line of Fairview.....		1							
Dayton.....	East line of Prior.....		1							
Dayton.....	East line of Moore.....		1							
Dayton.....	East line of Cleveland.....		1							
Duluth.....	North line of Seventh.....		1							
De Soto.....	South line of Collins.....		1							
De Soto.....	South line of Fauquier.....		1							
De Soto.....	South line of Whittall.....		1							
De Soto.....	South line of York.....		1							
De Soto.....	North and south line of Case.....		2							
Dawson.....	East and west line of Mendota.....		2							
Dawson.....	East and west line of Earl.....		2							
Dawson.....	East line of Forest.....		1							
Decatur.....	East line of Bedford.....		1							
Dooley.....	East line of County road.....		1							
Earl.....	South line of Pacific.....			1						
Earl.....	North line of Beech.....			1						
Earl.....	North and south line of Seventh.....			1	1					
Earl.....	North and south line of Case.....				2					
Edmund.....	West line of Rice.....		1							
Edmund.....	West line of Gaultier.....		1							
Edmund.....	East and west line of Western.....		2							
Edmund.....	East line of Mackubin.....		1							
Edmund.....	East and west line of Dale.....		2							
Edmund.....	East line of Grotto.....		1							
Edmund.....	East and west line of Victoria.....		2							
Eichenwald..	South line of Seventh.....		1							
Euclid.....	West line of Cypress.....		1							
Euclid.....	East and west line of Mendota.....			2						
Elfelt.....	North line of Charles.....		1							
Elfelt.....	North line of Thomas.....		1							
Elfelt.....	North line of Lafond.....		1							
Edgerton.....	North and south line of Case.....			2						
Edgerton.....	South line of Magnolia.....			1						
Edgerton.....	South line of Maryland.....			1						
Edgerton.....	North line of Minnehaha.....		1							
Ellis.....	West line of Hampden avenue.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	8-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Ellis.....	West line of Raymond avenue.....			1						
Ellis.....	East line of Bradford.....			1						
Everett court	South line of Wheeler.....			1						
Evergreen...	West line of Victoria.....			1						
Farrington...	North line of Summit.....			1						
Farrington...	North line of Laurel.....			1						
Farrington...	North and south line of Dayton.....			2						
Farrington...	North line of Nelson.....			1						
Farrington...	South line of Carroll.....			1						
Farrington...	South line of Rondo.....			1						
Farrington...	North line of Sherburne.....			1						
Farrington...	North line of Thomas.....			1						
Faulquier...	West line of Duluth.....			1						
Faulquier...	East and west line of Earl.....			2						
Faulquier...	North and south line of Seventh.....			2						
Faulquier...	East and west line of Arcade.....			2						
Fuller.....	West line of Rice.....			1						
Fuller.....	East line of Louis.....			1						
Fuller.....	West line of Farrington.....			1						
Fuller.....	East and west line of Western.....			2						
Fuller.....	East line of Mackubin.....			1						
Fuller.....	East and west line of Dale.....			2						
Fuller.....	West line of Victoria.....			1						
Fuller.....	East line of Chatsworth.....			1						
Fuller.....	East line of Lexington.....			1						
Fifth.....	East and west line of Bates.....			2						
Floral.....	South line of Summit.....		1							
Fourth.....	East and west line of Mendota.....			2						
Fourth.....	East line of Maple.....			1						
Fourth.....	East and west line of Bates.....			2						
Fourth.....	East and west line of Earl.....			2						
Frances.....	East and west line of Mendota.....			2						
Frank.....	North line of Margaret.....			1						
Frank.....	North line of Beech.....			1						
Fred.....	East line of Burr.....		1							
Front.....	West line of Como.....				1					
Front.....	East and west line of Rice.....			1	1					
Front.....	East line of Gaultier.....			1						
Front.....	East and west line of Western.....			2						
Front.....	East line of Mackubin.....			1						
Front.....	At Dale street.....			1	1	1				
Front.....	East line of Grotto.....			1						
Front.....	East and west line of Victoria.....				2					
Front.....	East line of Chatsworth.....			1						
Front.....	East line of Conway.....			1						
Forest.....	North line of Lexington.....			1						
Forest.....	North line of Third.....			1						
Forest.....	North line of Fremont.....			1						
Forest.....	North line of Fourth.....			1						
Forest.....	North line of Dawson.....			1						
Forest.....	North line of York.....			1						
Forest.....	South line of Case.....			1						
Forest.....	North line of Jeannine.....			1						
Forest.....	180 feet south on Wells, H.....			1						
Fairmount...	East of St. Albans 275 feet.....			1						
Fairmount...	East line of Grotto.....			1						
Fairmount...	East line of Victoria.....			1						
Fairmount...	West line of Victoria.....			1						
Ferndale....	West line of Laura.....			1						
Ferndale....	East line of Prior.....			1						
Ferndale....	West line of Fairview.....			1						
Fremont....	East and west line of Mendota.....			2						
Fairview....	At Shields on H.....			1						
Fairview....	North and south line of University, M. H. and B. O.....	1		1		2				
Fairview....	At Sherburne on H.....			1						
Fairview....	North line of Thomas.....				1					
Fairview....	North and south line of Minnehaha.....				2					
Fry.....	North and south line of Minnehaha.....			2						
Fry.....	South line of Van Buren.....		1							
Force main.	South of pumping station.....						1			
Force main.	B. O., at Trout Brook.....			1						



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Force main.	South of McCarron Lake, M. and B. O.	1					1			
Force main.	West line of Dale, M. and B. O.	1								
Force main.	McCarron road, M., B. W., B. O., M. H.						3			3
Force main.	At McCarron Station M., B. W., M. H.								1	
Flandrau.	North line of La Crosse.	1								
Grand.	East line of Oakland.	1								
Grand.	East and west line of Dale.	2								
Grand.	East line of Grotto.	1								
Grand.	East and west line of Victoria.	2								
Grand.	East line of Lexington.	1								
Grand.	East line of Cambridge.	1								
Grand.	West line of Cleveland.	1								
Grand.	East line of Fairview.	1								
Grove.	B. O., at Trout Brook sewer.	1								
Grove.	East line of Monroe place.					1				
Grove.	B. O., at Pine.	1								
Grotto.	South line of Grand.	1								
Grotto.	North and south line of Summit.	2								
Grotto.	South line of Holly.	1								
Grotto.	South line of Ashland.	1								
Grotto.	South line of Laurel.	1								
Grotto.	South line of Hague.	1								
Grotto.	South line of Selby.	1								
Grotto.	South line of Dayton.	1								
Grotto.	South line of Marshall.	1								
Grotto.	North line of Iglehart.	1								
Grotto.	North line of Carroll.	1								
Grotto.	North line of Sherman.	1								
Grotto.	North line of Thomas.	1								
Goodrich.	East and west line of Dale.	2								
Goodrich.	East line of Grotto.	1								
Goodrich.	East and west line of Victoria.	2								
Goodrich.	East line of Chatsworth.	1								
Greenbrier.	North line of Seventh.			1						
Greenbrier.	North line of Case.	1								
Greenbrier.	North line of Cock.	1								
Greenbrier.	North line of Sims.	1								
Gaultier.	North line of Sherburne.	1								
Gaultier.	North line of Thomas.	1								
Gaultier.	North and south line of Front.	2								
Gaultier.	North line of Hatch.	1								
Gaultier.	North line of Lawson.	1								
Gordon.	East and west line of Scudder.	2								
Gordon.	West line of Nourse.			1						
Gordon.	North line of Langford.	1								
Geranium.	East and west line of Arcade.	2								
Geranium.	East line of Forest.	1								
Geranium.	West line of Greenbrier.	1								
Geranium.	West line of Edgerton.	1								
Genove.	West line of Mississippi.	1								
Granite.	West line of Mississippi.	1								
Granite.	East line of Agate.	1								
Granite.	East line of Cortland.	1								
Hoffman.	South line of Seventh.	1								
Hoffman.	South line of McLean.	1								
Hoffman.	North line of River.	1								
Holly.	West line of Western.	1								
Holly.	East line of Mackubin.	1								
Holly.	East and west line of Dale.	2								
Holly.	East line of Grotto.	1								
Holly.	East line of Victoria.	1								
Hague.	West line of Dale.	1								
Hague.	East line of Grotto.	1								
Hague.	West line of Avon.	1								
Hague.	East and west line of Victoria.	2								
Hague.	East line of Chatsworth.	1								
Hague.	East and west line of Lexington.	2								
Hudson.	East line of Mendota.	1								
Hudson.	East and west line of Bates.	2								
Hastings.	East and west line of Earl.			2						
Hastings.	East line of Forest.			1						

\*Two of these are 8-inch blow-offs.

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	2-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Hastings...	West line of Maple.....				1					
Hastings...	West line of Mound.....				1					
Hewitt...	East and west line of Hamline.....			2	1					
Hewitt...	West line of Sheldon.....			1						
Hewitt...	West line of Holton.....			1						
Hewitt...	West line of Simpson.....			1						
Hewitt...	East and west line of Snelling.....			2						
Hope...	South line of Sixth.....			1						
Hope...	South line of Seventh.....			1						
Hampden...	East line of Raymond.....			1						
Hampden...	West line of Hampden.....			1						
Harvester...	East line of White Bear.....				1					
Hazel...	South line of Ames.....				1					
Horton...	North line of Van Slyke.....			1						
Hardenberg place.....	North line of Lyton.....		1							
Iglehart...	West line of Wabasha.....			1						
Iglehart...	East and west line of Rice.....			2						
Iglehart...	West line of Summit place.....			1						
Iglehart...	West line of Louis.....			1						
Iglehart...	West line of Farrington.....			1						
Iglehart...	East and west line of Western.....			2						
Iglehart...	East line of Mackubin.....			1						
Iglehart...	East and west line of Dale.....			2						
Iglehart...	East line of Grotto.....			1						
Iglehart...	West line of Avon.....			1						
Iglehart...	East and west line of Victoria.....			2						
Iglehart...	East line of Chatsworth.....			1						
Iglehart...	East and west line of Fairview.....			2						
Iglehart...	East and west line of Prior.....			2						
Jackson...	North line of University.....			1						
Jackson...	South line of Valley.....			1						
Jackson...	North and south line of Como.....				1	1				
Jackson...	South line of Pennsylvania.....				1					
Jackson...	South line of Sycamore.....				1					
Jay...	South line of Martin.....			1						
Jay...	South line of Fuller.....			1						
Jessamine...	East and west line of Arcade.....			2						
Jessamine...	West line of Greenbrier.....			1						
Jessamine...	East and west line of Edgerton.....			2						
Jessamine...	East line of Bradley.....			1						
Jessamine...	West line of Burr.....			1						
Jessamine...	West line of Clark.....			1						
Jessamine...	West line of Arkwright.....			1						
Jessamine...	East and west line of McMenamy.....			2						
Jessamine...	East line of Rice.....			1						
Jessamine...	East line of Forest.....			1						
Jessie...	North line of Case.....			1						
Jessie...	North line of Jenks.....			1						
Jessie...	North line of Lawson.....			1						
Jessie...	North line of Cook.....			1						
Jessie...	North line of Magnolia.....			1						
Jessie...	South line of Geranium.....			1						
Jessie...	South line of Rose.....			1						
Jessie...	South line of Maryland.....			1						
Jenks...	East and west line of Arcade.....			2						
Jenks...	West line of Greenbrier.....			1						
Jenks...	East line of Edgerton.....			1						
Jenks...	West line of De Soto.....			1						
Jenks...	East line of McMenamy.....			1						
Jenks...	East line of Cortland.....			1						
Kent...	South line of Holly.....		1							
Kent...	South line of Ashland.....		1							
Kent...	South line of Laurel.....		1							
Kent...	South line of Selby.....		1							
Kent...	North line of Marshall.....		1							
Kent...	North line of Iglehart.....		1							
Knapp...	East line of Langford.....			1						
Knapp...	North line of Langford.....			1						
Keston...	South line of Carter.....			1						
Laura...	North and south line of Waltham.....			2						
Laura...	South line of University.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4 Inch.	6 Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Laurel.....	West line of Nina.....				1					
Laurel.....	East line of Virginia.....				1					
Laurel.....	East and west line of Western.....				2					
Laurel.....	East line of Mackubin.....				1					
Laurel.....	East and west line of Dale.....				2					
Laurel.....	East line of Grotto.....				1					
Laurel.....	West line of Avon.....				1					
Laurel.....	East and west line of Victoria.....				2					
Laurel.....	East line of Chatsworth.....				1					
Lawton.....	South line of Summit.....				1					
Lincoln.....	West line of Oakland.....				1					
Lincoln.....	East and west line of Dale.....				2					
Lincoln.....	East line of Grotto.....				1					
Lincoln.....	East and west line of Victoria.....				2					
Lincoln.....	East line of Chatsworth.....				1					
Lincoln.....	West line of Cleveland.....				1					
Lincoln.....	East line of Cambridge.....				1					
Louis.....	North line of Nelson.....				1					
Louis.....	South line of Carroll.....				1					
Louis.....	South line of Rondo.....				1					
Louis.....	South line of St. Anthony.....				1					
Louis.....	South line of Martin.....				1					
Louis.....	South line of Fuller.....				1					
Linden.....	North line of Mt. Airy.....				1					
Lafond.....	West line of Rice.....				1					
Lafond.....	East line of Como.....				1					
Lafond.....	East line of Farrington.....				1					
Lafond.....	West line of Western.....				1					
Lafond.....	East line of Mackubin.....				1					
Lafond.....	East and west line of Dale.....				2					
Lafond.....	East line of Grotto.....				1					
Lafond.....	East and west line of Victoria.....				2					
Lynnhurst, W.....	North line of Ferona.....				1					
Lynnhurst, W.....	South line of University.....				1					
Lynnhurst, E.....	East line of Lynnhurst, W.....				1					
Lexington.....	South line of Summit.....					1				
Lexington.....	North line of University.....					1				
Lexington.....	North line of Front.....					1				
Lexington.....	North line of Sherburne.....					1				
Lexington.....	South line of N. P. R. on H.....					1				
Lexington.....	South line of Van Slyke.....					1				
Langford P. E.....	East line of Bayless.....					1				
Langford P. E.....	South line of Knapp.....					1				
Langford P. W.....	West line of Bayless.....					1				
Langford P. W.....	200 feet south of Blake.....					1				
Langford P. W.....	North line of Gordon.....					1				
Langford av.....	West line of Scudder on H.....					1				
Langford av.....	East line of Knapp on H.....					1				
Langford av.....	West line of County road.....					1				
Litchfield.....	East line of Rice.....					1				
Litchfield.....	West line of Victoria.....					1				
Leslie.....	West line of Victoria.....					1				
Lawson.....	West line of Earl.....					1				
Lawson.....	East and west line of Arcade.....					2				
Lawson.....	East line of Forest.....					1				
Lawson.....	West line of Greenbrier.....					1				
Lawson.....	East line of Edgerton.....					1				
Lawson.....	East and west line of McMenemy.....					2				
Lawson.....	East line of Rice.....					1				
Lawson.....	East line of Cortland.....					1				
Lawson.....	West line of Bradley.....					1				
Lake Como and Phalen.....	At Dale.....					1				
Lombard av.....	West line of Milton.....					1				
Lytton place.....	East line of Rice.....					1				
Long.....	South line of Raymond.....					1				
Mackubin.....	North line of Summit.....					1				



**LOCATION OF VALVES (HIGH SERVICE).—Continued.**

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Mackubin.	South line of Holly.....			1						
Mackubin.	South line of Ashland.....			1						
Mackubin.	South line of Laurel.....			1						
Mackubin.	South line of Selby.....			2						
Mackubin.	North and south line of Dayton.....			1						
Mackubin.	North line of Marshall.....			1						
Mackubin.	North line of Iglehart.....			1						
Mackubin.	North line of Carroll.....			1						
Mackubin.	North line of Rondo.....			1						
Mackubin.	North line of St. Anthony.....			1						
Mackubin.	North line of Martin.....			1						
Mackubin.	South line of Aurora.....			1						
Mackubin.	North and south line of University.....			2						
Maple.	South line of Hudson.....			1						
Maple.	North line of Euclid.....			1						
Maple.	North line of Conway.....			1						
Maple.	South line of Fourth.....			1						
Maple.	North line of Fifth.....			1						
Maple.	South line of Seventh.....			1						
Margaret.	East and west line of Earl.....			2						
Margaret.	East line of Forest.....			1						
Margaret.	East and west line of Mendota.....			2						
Margaret.	North and south line of Seventh.....			2						
Margaret.	East line of Greenbrier.....			1						
Martin.	East and west line of Rice.....			2						
Martin.	West line of Louis.....			1						
Martin.	West line of Farrington.....			1						
Martin.	East and west line of Western.....			2						
Martin.	East line of Mackubin.....			1						
Martin.	East and west line of Dale.....			2						
Martin.	West line of Victoria.....			1						
Maria.	South line of McLean.....			1						
Maria.	South line of Cherry.....			1						
Maria.	North line of Plum.....			1						
Maria.	North line of Hudson.....			1						
Maria.	South line of Ravine.....			1						
Maria.	North line of Conway.....			1						
Maria.	South line of Fourth.....			1						
Maria.	North line of Fifth.....			1						
Maria.	North and south line of Seventh.....			1						
Marshall.	West line of Western.....			1						
Marshall.	East line of Mackubin.....			1						
Marshall.	East and west line of Dale.....			1	1					
Marshall.	West line of Grotto.....			1	2					
Marshall.	East and west line of Victoria.....			1	1					
Marshall.	East line of Chatsworth.....			1						
Marshall.	West line of Snelling.....			1						
Marshall.	West line of Aldine.....			1						
Marshall.	East and west line of Fairview.....			2						
Marshall.	East and west line of Prior.....			2						
Marshall.	East and west line of Cleveland.....			2						
Marshall.	North line of Hudson.....			1						
Mendota.	B. O. at Euclid.....	1								
Mendota.	South line of Fourth.....				1					
Mendota.	North line of Margaret, M. and B. O.....	1			1					
Mendota.	North and south line of Seventh, M. and B. O.....	1			1	1				
Mendota.	South line of Fauquier.....			1						
Mt. Airy.	East line of Linden.....			1						
Mt. Airy.	West line of Warren.....			1						
Mt. Ida.	West line of De Soto.....			1						
Maryland.	West line of Greenbrier.....			1						
Maryland.	East and west line of Edgerton.....			2						
Maryland.	At Dale street.....				2					
Marion.	North line of University.....			1						
Marion.	North line of Sherburne.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Minnehaha..	West line of Arcade.....				1					
Minnehaha..	East line of Greenbrier.....				1					
Minnehaha..	East and west line of De Soto.....			12						
Minnehaha..	East line of Burr.....			1						
Minnehaha..	East line of Jessie.....			1						
Minnehaha..	West line of Dale.....				1					
Minnehaha..	East line of Pascal.....				1					
Minnehaha..	East and west line of Snelling.....				2					
Minnehaha..	East line of Aldine.....				1					
Minnehaha..	East and west line of Fairview.....				2					
Mound.....	North and south line of Burns.....			1	1					
Manvel.....	East and west line of Dayless.....			2						
Magnolia..	East line of Forest.....			1						
Magnolia..	East and west line of Arcade.....			2						
Magnolia..	West line of Greenbrier.....			1						
Magnolia..	East line of Edgerton.....			1						
Magnolia..	East and west line of McMenemy.....			2						
Minneapolis.	At Dale.....				1					
Mulberry..	East line of Third.....			1						
Mulberry..	West line of Sixth.....			1						
Millford..	West line of Rice.....			1						
Millford..	West line of Albemarle.....			1						
Millford..	East line of Woodbridge.....			1						
Manitoba..	East line of Rice.....			1						
Macalester.	South line of Grand.....			1						
Macalester.	South line of Lincoln.....			1						
Macalester.	South line of Summit.....			1						
McMenemy.	North line of Case.....					1				
McMenemy.	South line of Magnolia.....					1				
McLean.....	East and west line of Earl.....			2						
Nelson.....	West line of Summit.....			1						
Nelson.....	East line of Farrington.....			1						
Nelson.....	East line of Western.....			1						
Nina.....	North line of Summit.....			1						
North.....	West line of Bradley.....			1						
North.....	West line of Truxton.....			1						
North.....	North line of Seventh.....			1						
Nourse.....	South line of Gordon.....			1						
Oakland....	South line of Ramsey.....			1						
Oakland....	East line of Lawton.....			1						
Oakland....	South line of Lincoln.....			1						
Oakland....	South line of Summit.....			1						
Oakley.....	East line of Prior.....			1						
Osceola....	West line of Pleasant.....			1						
Osceola....	East line of Grotto.....			1						
Osceola....	East and west line of Victoria.....			2						
Osceola....	East line of Chatsworth.....			1						
Park place.	South of Summit.....			1						
Park ave....	North line of Martin.....			1						
Park ave....	North and south line of University.....			2						
Park ave....	North line of Sherburne.....			1						
Park ave....	North line of Winnipeg.....			1						
Payne.....	South line of Fauquier.....			1						
Payne.....	North line of Minnehaha.....			1						
Payne.....	12 feet north of Beaumont, B. O.....			1						
Payne.....	North line of Whittall.....			1						
Payne.....	North line of Wells.....			1						
Payne.....	North line of York.....			1						
Payne.....	North and south line of Case.....			2						
Payne.....	North line of Jenks.....			1						
Payne.....	North line of Lawson.....			1						
Payne.....	North line of Cook.....			1						
Payne.....	North line of Magnolia.....			1						
Payne.....	North line of Jessamine.....			1						
Payne.....	North line of Geranium.....			1						
Payne.....	North and south line of Maryland.....			2						
Payne.....	North line of Hawthorn.....			1						
Payne.....	North line of Orange.....			1						
Payne.....	North line of Hyacinth.....			1						
Pascal.....	North line of Minnehaha.....			1						
Pascal.....	South line of Wesley.....			1						



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4 Inch.	6 Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Pascal.....	North line of Hewitt.....			1						
Preble.....	North line of Beaumont.....			1						
Pine.....	North line of Grove.....					1				
Pine.....	North line of Thirteenth.....			1						
Pine.....	North line of Ometed.....			1						
Pine.....	North and south line of Williams.....			2						
Portland.....	West line of Western.....			1						
Portland.....	East line of Mackubin.....			1						
Portland.....	East and west line of Dale.....			2						
Portland.....	East line of Grotto.....			1						
Portland.....	East line of Victoria.....			1						
Pennsylvania.....	West line of Olive.....			1						
Pennsylvania.....	West line of Rice.....			1						
Plum.....	East line of Bates.....			1						
Plum.....	East line of Hoffman.....			1						
Prior.....	South line of Dayton.....			1						
Prior.....	North and south line of Marshall.....			1						
Prior.....	North line of St. Anthony.....				1					
Prior.....	South line of University.....				1					
Pym.....	West line of Bayless.....				1					
Phalen.....	North line of Seventh.....				1					
Poplar.....	East line of Cortland.....			1						
Princeton.....	North line of Macalester.....			1						
Princeton.....	East line of Cambridge.....			1						
Pacific.....	West line of Earl.....			1						
Pacific.....	East line of Earl.....			1						
Reservoir.....	On Reservoir grounds.....		1		1					2
Rice.....	North and south line of Summit, M. and B. O.....	1		1		1				
Rice.....	North line of St. Anthony.....					1				
Rice.....	North and south line of University, M. and H.....		1			1	1			
Rice.....	North line of Sherburne on H.....		1							
Rice.....	North line of Charles on H.....		1							
Rice.....	North line of Edmund, H and B. O.....		2							
Rice.....	North and south line of Como.....				1		1			
Rice.....	North line of Van Buren.....				1					
Rice.....	North and south line of Sycamore.....				1	1				
Rice.....	Lyon place on H.....			1						
Rice.....	South line of Wazata on H.....			1						
Rice.....	North and south line of Front.....					2				
Rice.....	North line of Hatch on H.....			1						
Rice.....	North line of Lawson on H.....			1						
Rice.....	North line of Cook on H.....			1						
Rice.....	North line of Oliver on H.....			1						
Robert.....	South line of Aurora.....			1						
Robert.....	North and south line of University.....			2						
Robert.....	North line of Valley.....			1						
Rondo.....	West line of Rice.....			1						
Rondo.....	East line of Louis.....			1						
Rondo.....	West line of Farrington.....			1						
Rondo.....	East and west line of Western.....			2						
Rondo.....	East line of Mackubin.....			1						
Rondo.....	East and west line of Dale.....			2						
Rondo.....	East line of Grotto.....			1						
Rondo.....	West line of Avon.....			1						
Rondo.....	East and west line of Victoria.....			2						
Rondo.....	East and west line of Prior.....			2						
Reaney.....	West line of Duluth.....			1						
Reaney.....	East and west line of Earl.....			2						
Reaney.....	North and south line of Seventh.....			2						
Reaney.....	East and west line of Arcade.....			2						
Reaney.....	West line of Payne.....			1						
Reaney.....	East line of Greenbrier.....			1						
Reaney.....	East line of Summit.....			1						
Rice.....	West line of Duluth.....			1						
Rice.....	East and west line of Earl.....			2						
Rice.....	South line of Seventh.....			1						
Rayoux.....	South line of St. Anthony.....		1							
Rayoux.....	South line of Fuller.....		1							
Ravine.....	East and west line of Bates.....		2							
Raymond.....	North line of University, M. and H.....			1		1				

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Raymond...	South line of Territorial road on H...			1						
Raymond...	North line of Ellis on H...			1						
Raymond...	East line of Bayless...			1						
Raymond...	South line of Manvel...			1						
Raymond...	North and south line of Wheeler...			2						
Raymond...	South line of Atty...			1						
Raymond...	South line of Pratt...			1						
Raymond...	South line of Cudworth...					1				
Robbins...	East line of Bayless...			1						
Rose...	West line of Arcade...			1						
Rose...	East line of Edgerton...			1						
River...	West line of Maria...		1							
St. Anthony...	West line of Rice...			1						
St. Anthony...	West line of Louis...			1						
St. Anthony...	West line of Farrington...			1						
St. Anthony...	East and west line of Western...			2						
St. Anthony...	East line of Mackubin...			1						
St. Anthony...	East and west line of Dale...			2						
St. Anthony...	East line of Grotto...			1						
St. Anthony...	West line of Avon...			1						
St. Anthony...	East and west line of Victoria...			2						
St. Anthony...	West line of Snelling...			1						
St. Anthony...	West line of Fry...			1						
St. Anthony...	West line of Aldine...			1						
St. Anthony...	West line of Wheeler...			2						
St. Anthony...	East and west line of Fairview...			2						
St. Anthony...	East and west line of Prior...			2						
St. Anthony...	East line of Cleveland...			1						
St. Peter...	South line of Iglehart...			1						
St. Peter...	South line of Tilton...			1						
St. Peter...	North and south line of Martin...			2						
St. Peter...	South line of University...			1						
Selby...	West line of Summit...			1						
Selby...	West line of Nina...			1						
Selby...	West line of Farrington...			1						
Selby...	East and west line of Western...			2						
Selby...	East line of Mackubin...			1						
Selby...	East and west line of Dale...			2						
Selby...	East line of Grotto...			1						
Selby...	West line of Avon...			1						
Selby...	East and west line of Victoria...			2						
Selby...	East line of Chatsworth...			1						
Selby...	East and west line of Lexington...			2						
Selby...	East line of Griggs...			1						
Selby...	East and west line of Hamline...			2						
Selby...	East line of Pascal...			1						
Selby...	East line of Snelling...			1						
Selby...	West line of Hershel...			1						
Selby...	East line of Fairview...			1						
Seventh...	West line of White Bear...					1				
Seventh...	West line of Rock...					1				
Seventh...	East and west line of Phalen...					2				
Seventh...	East line of Duluth...					1				
Seventh...	East and west line of Earl, M. and B. O.		1			1				
Seventh...	South line of Fauquier...					1				
Seventh...	B. O., at Mendota...		1							
Seventh...	North line of Beech...					1				
Seventh...	West line of Maple, M. and B. O.		1			1				
Seventh...	West line of Hoffman, M. and B. O.		1			1				
Sherburne...	West line of Cedar...			1						
Sherburne...	East line of Park...			1						
Sherburne...	East and west line of Rice...			2						
Sherburne...	West line of Gaultier...			1						
Sherburne...	East and west line of Western...			2						
Sherburne...	East line of Mackubin...			1						
Sherburne...	East and west line of Dale...			2						
Sherburne...	East line of Grotto...			1						
Sherburne...	East and west line of Victoria...			2						
Sherburne...	West line of Lexington...			1						
Summit av.	East line of Wabasha...			1						
Summit av.	East line of St. Peter...			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Summit av.	East and west line of Rice, M. and B. O.	1		1	1					
Summit av.	North and south line of Dayton.		1	1						
Summit av.	North line of Nina.		1	1						
Summit av.	East line of Western.			1						
Summit av.	East line of Mackubin.				1					
Summit av.	B. O., at Oakland.	1								
Summit av.	East and west line of Dale.				2					
Summit av.	At St. Albans, B. O.		1							
Summit av.	East line of Grotto.				1					
Summit av.	East and west line of Victoria.				2					
Summit av.	East line of Chateworth.				1					
Summit av.	East and west line of Lexington.				2					
Summit av.	East line of Griggs.				1					
Summit av.	East and west line of Hamline.				2					
Summit av.	West line of Snelling.		1		1					
Summit av.	West line of Cambridge.			1						
Summit pl.	North line of Nelson.			1						
Summit pl.	South line of Carroll.			1						
Summit pl.	South line of Rondo.			1						
Summit pl.	South line of St. Anthony.			1						
Summit pl.	South line of Martin.			1						
Summit pl.	South line of Fuller.			1						
Summit ct.	South line of Summit.		1							
St. Albans.	North line of Pleasant.				1					
St. Albans.	South of Kenwood, P. D.				1					
St. Albans.	South of Fairmount.			1						
St. Albans.	South of Summit avenue.			1						
St. Albans.	South of Laurel avenue.			1						
St. Albans.	North line of Marshall.			1						
St. Albans.	North line of Iglehart.			1						
St. Albans.	North line of Carroll.			1						
St. Albans.	North line of St. Anthony.			1						
Sims.	East and west line of Arcade.				2					
Sims.	West line of Greenbrier.			1						
Sims.	East line of Edgerton.			1						
Sims.	West line of Earl.			1						
Short.	West line of Maria.			1						
Short.	East line of Hoffman.			1						
Snelling.	At Goodrich on H.			1						
Snelling.	At Lincoln on H.			1						
Snelling.	South line of Grand on H.			1						
Snelling.	North and south line of Summit, M. and H.			1		2				
Snelling.	South line of Ashland on H.			1						
Snelling.	South line of Hague on H.			1						
Snelling.	South line of Selby on H.			1						
Snelling.	South line of Marshall, M. and H.			1		1				
Snelling.	North line of Milwaukee Short line.					1				
Snelling.	North line of Carroll on H.			1						
Snelling.	North line of St. Anthony on H.			1						
Snelling.	North line of Shields on H.			1						
Snelling.	North and south line of University.					2				
Snelling.	At Edmund on H.			1						
Snelling.	At Blair on H.			1						
Snelling.	North and south line of Minnehaha, M. and H.			1		2				
Snelling.	North line of Capitol on H.			1						
Snelling.	North line of Wesley on H.			1						
Snelling.	South line of Manitoba Ry. on H.			1						
Simpson.	South line of Minnehaha.			1						
Simpson.	South line of Wesley.			1						
Simpson.	South line of Hewitt.			1						
Simpson.	South line of Van Buren.			1						
Sidney.	North line of Ellis.			1						
Sixth.	North line of Summit.			1						
Sixth.	West line of Arcade.			1						
Sixth.	West line of Hope.			1						
Sixth.	West line of Maple.			1						
Sixth.	East and west line of Bates.			2						
Sixth.	West line of Maria.			1						
Scudder.	At Atty on H.			1						



## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Scudder....	South line of Langford.....					1				
St. Clair....	West line of Victoria.....				1					
St. Clair....	East line of Chatsworth.....				1					
Stinson....	West line of Gaultier.....			1						
Sycamore....	West line of Cortland.....				1					
Sycamore....	East line of Sylvan.....				1					
Sycamore....	East line of Rice.....				1					
Syndicate....	South line of Summit.....			1						
Syndicate....	South line of Grand.....			1						
Stillwater....	West line of White Bear.....			1						
Sinnen....	South line of Seventh.....			1						
Suction main	At McCarron Station, M., B. O., B.									
	W. and M. H.....			3				2	1	
Third.....	East and west line of Mendota.....			12						
Third.....	East line of Maple.....			1						
Third.....	East and west line of Bates.....			12						
Third.....	South line of Summit.....			1						
Third street,										
north.....	North line of East Third.....			1						
Tilton.....	East line of St. Peter.....			1						
Tilton.....	East line of Rice.....			1						
Thomas.....	West line of Como.....			1						
Thomas.....	West line of Gaultier.....			1						
Thomas.....	East line of Farrington.....			1						
Thomas.....	East and west line of Western.....			2						
Thomas.....	East line of Mackubin.....			1						
Thomas.....	East and west line of Dale.....			2						
Thomas.....	East line of Grotto.....			1						
Thomas.....	West line of Victoria.....			1						
Topping.....	West line of Como.....			1						
Topping.....	East line of Dale.....			1						
Taylor.....	West line of Pascal.....			1						
Taylor.....	West line of Simpson.....			1						
Taylor.....	East and west line of Snelling.....			2						
Taylor.....	East line of Aldine.....			1						
Territorial										
road.....	West line of Raymond.....			1						
Territorial										
road.....	East line of Cromwell.....			1						
Tatum.....	North line of Minnehaha.....			1						
University..	South line of Valley.....				1					
University..	B. O., 275 feet west of Canada.....			1						
University..	On H. west of Ashton.....			1						
University..	West line of Robert.....				1					
University..	East and west line of Rice, M. and									
	B. O.....			1		1	1			
University..	West line of Gaultier.....				1					
University..	East and west line of Western.....				2					
University..	East line of Mackubin.....			1						
University..	East and west line of Dale.....				1		1			
University..	East line of St. Albans on H.....			1						
University..	East line of Grotto on H.....			1						
University..	East line of Avon on H.....			1						
University..	East and west line of Victoria, M.									
	and H.....			1			2			
University..	East line of Milton on H.....			1						
University..	East line of Chatsworth on H.....			1						
University..	East line of Oxford on H.....			1						
University..	East and west line of Lexington, M.						2			
	and H.....			1						
University..	East line of Dunlap on H.....				1					
University..	East line of Griggs on H.....			1						
University..	East line of Syndicate on H. B.....				1					
University..	East and west line of Hamline, M.									
	and H.....			1			2			
University..	East line of Albert on H. B.....				1					
University..	East line of Pascal on H.....			1						
University..	East line of Simpson on H. B.....				1					
University..	East line of Ashbury on H. B.....				1					
University..	East and west line of Snelling, M.									
	and H.....			1			2			
University..	East line of Fry on H. B.....			1						

## LOCATION OF VALVES (HIGH SERVICE).—Continued.

STREET.	LOCATION.	2-Inch.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
University...	East line of Aldine on H.....	1								
University...	East line of Wheeler on H.....	1								
University...	East and west line of Fairview, M. and B. O.....	1					2			
University...	East and west line of Prior on M. and H.....	1					1			
University...	East end of Transfer bridge on H.....			1						
University...	Center of Transfer bridge on H.....			1						
University...	West line of Cleveland, M. and H.....			1			1			
University...	West line of Montgomery on H.....			1						
University...	West line of Vandalia on H.....			1						
University...	West line of Pillsbury on H.....			1						
University...	West line of Hersey on H.....			1						
University...	West line of La Salle on H.....			1						
University...	West line of Clinton on H.....			1						
University...	East and west line of Raymond.....				1		1			
Vandalia...	North line of University.....			1						
Vandalia...	North line of Charles.....			1						
Valley...	West line of Broadway.....					1				
Viola...	West line of Cedar.....			1						
Viola...	East line of Park.....			1						
Viola...	East line of Rice.....			1						
Virginia...	North line of Summit.....			1						
Virginia...	South line of Selby.....			1						
Virginia...	North and south line of Dayton.....			2						
Virginia...	North line of Nelson.....			1						
Virginia...	South line of Iglehart.....			1						
Virginia...	North line of Fuller.....			1						
Virginia...	South line of University.....			1						
Virginia...	North line of Thomas.....			1						
Virginia...	North line of Lafond.....			1						
Virginia...	North line of Blair.....			1						
Virginia...	North line of Van Buren.....			1						
Virginia...	South line of Como.....			1						
Victoria...	North line of St. Clair, M. and H.....			1		1				
Victoria...	North and south line of Summit.....					2				
Victoria...	North line of Ashland on H.....			1						
Victoria...	North and south line of Marshall, M. and H.....			1		2				
Victoria...	North and south line of University.....					2				
Victoria...	North line of Front.....				1					
Van Buren...	West line of Simpson.....			1						
Van Buren...	West line of Western.....			1						
Van Buren...	East line of Mackubin.....			1						
Van Buren...	East and west line of Dale.....			2						
Van Buren...	East line of Grotto.....			1						
Van Buren...	East line of Aldine.....			1						
Van Slyke...	West line of Chatsworth.....			1						
Van Slyke...	West line of Argyle.....			1						
Van Slyke...	West line of Horton.....			1						
Van Slyke...	East line of Lexington.....			1						
Wabasha...	North line of Iglehart.....			1						
Wabasha...	North and south line of Central.....		1	1						
Western...	South line of Holly, M. and B. O.....	2			1					
Western...	North and south line of Dayton.....				1	1				
Western...	North line of Rondo, M. and B. O.....	1				1				
Western...	North line of University.....					1				
Western...	B. O., at Sherburne.....	1								
Western...	North line of Lafond.....					1				
Western...	South line of Como.....					1				
Waltham...	East line of Prior.....			1						
Williams...	West line of Olive.....			1						
Wilder...	North line of Iglehart.....			1						
Wilder...	North line of Carroll.....			1						
Wilder...	South line of St. Anthony.....			1						
Whitall...	East and west line of Edgerton.....			2						
Whitall...	East line of Bradley.....			1						
Whitall...	West line of Burr.....			1						
Walker...	North line of Hewitt.....			1						
Wesley...	West line of Pascal.....			1						
Wesley...	West line of Snelling.....			1						
Workhouse...	West line of Lexington.....			1						



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4 Inch.	6 Inch.	12-Inch.	16-Inch.	20 Inch.	24-Inch.	30-Inch.	36-Inch.
Wheeler St.	East line of Bayless.....				1					
Westminster	South line of Case.....			1						
Westminster	South line of York.....			1						
Wheeler av.	South line of University.....			1						
Woodbridge.	South line of Front.....			1						
Winnipeg.	East line of Rice.....			1						
White Bear.	North line of Seventh.....				1					
White Bear.	South line of Harvester.....				1					
Wells.....	West line of Greenbrier.....		1							
Wells.....	East line of Walsh.....		1							
Wells.....	West line of Arcade.....			1						
York.....	East and west line of Arcade.....			2						
York.....	West line of Greenbrier.....			1						
York.....	East and west line of Edgerton.....			2						
York.....	East line of Bradley.....			1						
York.....	East line of Clark.....			1						
York.....	East line of Cortland.....			1						
Totals .....		23	115	*952	137	67	33	9	6	5

Number of valves laid this year..... 20

Number of valves transferred from low service.... 22

Total number of valves on high service ..... 1,347

\*Two of these are 8-inch blow-offs.

TABLE NO. 15.

## LOCATION OF VALVES (LOW SERVICE).

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Alabama...	East line of State...			1							
Ada...	North line of Robie...		1								
Arbor...	North line of Jefferson...			1							
Armstrong...	East and west line of Seventh...			1							
Armstrong...	East and west line of Victoria...			1							
Audubon...	East line of Seventh...			1							
Banfil...	East and west line of Seventh...		1								
Banfil...	West line of Western...		1								
Banfil...	West line of Smith...		1								
Bancroft...	North line of Winifred...			1							
Bancroft...	North line of Robie...			1							
Bancroft...	North line of Concord...			1							
Bay...	East and west line of Seventh...			2							
Bay...	South line of Lee...			1							
Bay...	North and south line of Tuscarora...			2							
Bay...	South line of Randolph...			1							
Bradley...	North line of Partridge...			1							
Bradley...	North line of North, D. H. and L...			1							
Beaumont...	East line of De Soto, D. H. and L...			1							
Becker pi...	South line of Lafayette...			1							
Belvidere...	South line of Concord...			1							
Belvidere...	West line of Waterloo...			1							
Midwell...	South line of Isabel...			1							
Broadway...	Union Depot R. R. yard, H...		2								
Broadway...	North and south line of Third, M. and B. O...		1				2				
Broadway...	North line of Fifth...					1					
Broadway...	North line of Sixth, H...			1							
Broadway...	North and south line of Seventh, M. and H...		1	2			1		1		
Broadway...	At Ninth, B. O...			1							
Broadway...	South line of Tenth, M. H...								1		
Broadway...	North line of Thirteenth...		1								
Burr...	South line of Fauquier, D. H. and L...			1							
Bruno...	East line of Lafayette...			1							
Brunson...	South line of Hopkins...			1							
Brunson...	South line of North, D. H. and L...			1							
Canada...	North line of Ninth...			1							
Canada...	North and south line of Grove...			2							
Cedar...	South and north line of Third...				1	1					
Cedar...	North line of Fifth...					1					
Cedar...	At Sixth, B. O...		1								
Cedar...	South and North line of Seventh...					2					
Cedar...	At Eighth, B. O...		1								
Cedar...	South line of Tenth...					1					
Cedar...	South and north line of Twelfth...							1			
Chestnut...	West line of Franklin...			1							
Chestnut...	East line of Seventh...			1							
Cliff...	North line of Goodhue...			1							
Clinton...	South line of Congress...			1							
Chicago...	East and West line of Starkey...			2							
College...	West line of Cedar...			1							
College...	West line of Wabasha...			1							
College...	West line of St. Peter...			1							
College...	South line of Tenth...			1							
Congress...	West line of Anita...			1							
Congress...	East and west line of State...			2							
Congress...	East line of Clinton...			1							
Congress...	East and west line of Concord...			2							
Congress...	East line of Wabasha...			1							
Congress...	West line of Goff...			1							
Congress...	East line of Stryker...			1							
Congress...	East line of Winslow...			1							
Congress...	East line of Bellows...			1							
Concord...	South line of Isabel...					1					
Concord...	East and west line of State...					2					
Concord...	East line of Bancroft...					1					
Concord...	West line of Kansas...					1					

## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Concord.....	East line of Stickney.....					1					
Collins.....	East line of Lafayette, D. H. and L.....			1							
Colorado.....	West line of Clinton.....			1							
Colorado.....	East line of Livingston.....			1							
Colborne.....	North line of Seventh.....			1							
Colborne.....	North line of St. Clair.....			1							
Daly.....	North line of James.....			1							
Daly.....	South line of Jefferson.....			1							
Dearborn.....	East line of Livingston.....			1							
Delos.....	West line of Clinton.....			1							
Delos.....	East line of Livingston.....			1							
Delos.....	East and west line of Starkey.....			2							
Delos.....	East line of Stryker.....			1							
Delos.....	East line of Bidwell.....			1							
Douglas.....	North and south line of Seventh.....			2							
Douglas.....	South line of Lisbon.....			1							
Dousman.....	North line of Von Minden.....			1							
Dousman.....	South line of Goodhue.....			1							
Duke.....	South line of Jefferson.....			1							
Duke.....	North and South line of Seventh.....			2							
Eagle.....	North line of Washington.....			1							
Eagle.....	South line of Exchange.....			1							
Eagle.....	South line of Seventh.....			1							
Exchange.....	At center of Wilkin.....		1								
Exchange.....	North line of Sherman.....		1								
Exchange.....	West line of Chestnut.....		1								
Exchange.....	West line of Eagle.....		1								
Exchange.....	North and south line of Third.....		2								
Exchange.....	North and south line of Seventh.....		1	1							
Exchange.....	South line of Ninth.....		1								
Exchange.....	East and west line of St. Peter.....		2								
Erle.....	North line of Seventh.....			1							
Eighth.....	107 feet east of Neill, B. O.....		1								
Eighth.....	East and west line of Locust.....				2						
Eighth.....	West line of Olive.....				1						
Eighth.....	East and west line of Broadway.....				4						
Eighth.....	East line of Wacouta.....				1						
Eighth.....	West line of Sibley.....				1						
Eighth.....	East and west line of Jackson.....				2						
Eighth.....	East line of Robert.....				1						
Eighth.....	East line of Minnesota.....				1						
Eighth.....	East and west line of Cedar.....			2							
Eighth.....	East line of Wabasha.....			1							
Eleventh.....	West line of Jackson.....				1						
Eleventh.....	West line of Robert.....				1						
Eleventh.....	East line of Cedar.....				1						
Elm.....	East line of Exchange.....			1							
Franklin.....	North line of Sherman.....			1							
Franklin.....	North line of Irvine Park drive.....			1							
Franklin.....	North line of Chestnut.....			1							
Franklin.....	North line of Third.....			1							
Franklin.....	North line of Fourth.....			1							
Franklin.....	North and south line of Seventh.....			2							
Franklin.....	South line of Ninth.....			1							
Fairfield.....	West line of State.....			1							
Fairfield.....	West line of Eva.....			1							
Fairfield.....	West line of Eaton.....			1							
Fairfield.....	West line of Livingston.....			1							
Fairfield.....	East and west line of Starkey.....			2							
Fairfield.....	West line of Wabasha.....			1							
Fauquier.....	East line of De Soto.....				1						
Fillmore.....	West line of State.....			1							
Fillmore.....	East line of Eva.....			1							
Fillmore.....	East line of Robert.....			1							
Fillmore.....	East line of Livingston.....			1							
Fillmore.....	East and west line of Starkey.....			2							
Fifth.....	West line of Neill.....			1							
Fifth.....	West line of William.....			1							
Fifth.....	West line of John.....			1							
Fifth.....	West line of Olive.....			1							
Fifth.....	East and west line of Broadway.....			1		1					

## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Fifth.....	East line of Wacouta.....					1					
Fifth.....	East line of Sibley.....					1					
Fifth.....	East and west line of Jackson.....					2					
Fifth.....	West line of Robert.....					1					
Fifth.....	East and west line of Cedar.....					2					
Fifth.....	West line of Wabasha.....			1							
Fifth.....	West line of St. Peter.....			1							
Fifth.....	West line of Market.....			1							
Fifth.....	West line of Washington.....		1								
Fifth.....	South line of West Seventh.....			1							
Fifth.....	East line of Exchange.....			1							
Fifth.....	East line of Fort.....			1							
Fifth.....	East line of Smith.....			1							
Fifth.....	East line of Third.....				1						
Forbes.....	West line of Wilkin.....				1						
Forbes.....	East and west line of Seventh.....				2						
Forbes.....	West line of Smith.....				1						
Fort.....	North line of Fourth, M. and B. O.....		2					1			
Fort.....	South line of Fifth, H.....		1								
Fort.....	South line of Sixth, H.....		1								
Fort.....	South line of Ninth, M. and H.....		1					1			
Fort.....	Between Ninth and Tenth, H.....		1								
Fourth.....	A St. Paul & Duluth R. R., H.....			1							
Fourth.....	East and west line of Kittson.....					2					
Fourth.....	At Neill, B. O.....	1									
Fourth.....	West line of Locust.....					1					
Fourth.....	East and west line of Broadway.....				1	1					
Fourth.....	West line of Racabel.....				1						
Fourth.....	West line of Wacouta.....				1						
Fourth.....	East and west line of Jackson.....			2							
Fourth.....	East line of Minnesota.....			1							
Fourth.....	East and west line of Cedar.....			2							
Fourth.....	West line of Wabasha.....			1							
Fourth.....	West line of Market.....			1							
Fourth.....	East line of Franklin.....			1							
Fourteenth.....	East and west line of Canada.....			2							
Fourteenth.....	East line of Jackson.....			1							
Garfield.....	North line of Lisbon.....			1							
Garfield.....	North line of Goodrich.....			1							
Grace.....	South line of Seventh.....			1							
George.....	West line of State.....					1					
George.....	West line of Livingston.....					1					
George.....	East line of Stryker.....					1					
Greenwood.....	South line of Congress.....			1							
Glencoe.....	East line of Columbia.....			1							
Glencoe.....	West line of Mississippi.....			1							
Goff.....	North line of Winifred.....			1							
Goodhue.....	East and west line of Seventh.....			2							
Goodhue.....	East line of Richmond.....			1							
Goodrich.....	East and west line of Seventh, M. and B. O.....	1		1		1					
Grove.....	Between Temperance and Canada, H.....		1								
Grove.....	East line of Jackson.....							1			
Grove.....	Center of Mississippi, M. H. and B. O.....		2					2			
Grove.....	West line of Lafayette.....			1							
Hall.....	South line of Colorado.....			1							
Hall.....	North and south line of Isabel.....			2							
Hall.....	South line of Congress.....			1							
Hall.....	North line of Robie.....			1							
Hall.....	North line of George.....			1							
Harrison.....	West line of Douglas.....										
Harrison.....	West line of Garfield.....			1							
Harrison.....	East line of Lawton.....			1							
Hopkins.....	West line of Bradley.....			1							
Hopkins.....	East line of De Soto.....			1							
Isabel.....	West line of State.....					1					
Isabel.....	East and west line of Starkey.....					2					
Isabel.....	West line of Winslow.....					1					
Indiana.....	West line of State.....						1				
Indiana.....	West line of Eaton.....						1				
Indiana.....	East and west line of Starkey.....					1	1				



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Indiana.....	West line of Walther.....					1					
Jackson.....	At levee, M. and B. O.....	1	1								
Jackson.....	Between Third and Fourth, H.....			1							
Jackson.....	South line of Fourth.....					1					
Jackson.....	North and south line of Seventh.....					2					
Jackson.....	South line of Ninth.....					1					
Jackson.....	South line of Twelfth.....					1					
Jackson.....	North line of Grove.....			1							
Jackson.....	South line of Fourteenth.....			1							
James.....	East and west line of Seventh.....			2							
James.....	East line of Warsaw.....			1							
Jefferson.....	East and west line of Seventh.....			1		1					
Jefferson.....	East line of Warsaw.....					1					
Jessie.....	South line of Fauquier, D. H. and L.....			1							
John.....	North line of Third.....			1							
John.....	North line of Fourth.....			1							
John.....	North line of Fifth.....			1							
John.....	North and south line of Seventh.....			1		1					
John.....	South line of Tenth.....			1							
John.....	North and south line of Grove.....			1		1					
John.....	North and south line of Olmsted.....			2							
Juno.....	North and south line of Victoria.....			2							
Kittson's ad	Alley block 4, east line Broadway.....					1					
Kentucky.....	East line of State.....			1							
Kittson.....	North line of Fourth.....			1							
Kittson.....	North line of Fifth.....			1							
Kittson.....	South line of Seventh.....			1							
Lafayette.....	North line of Woodward, H.....			1							
Lafayette.....	North and south line of Bruno, C. V.....						3				
Lafayette.....	Northern Pacific Ry., B. O.....			1							
Lafayette.....	South line of Collins.....					1					
Lee.....	West line of Warsaw.....			1							
Lee.....	South line of Seventh.....			1							
Leech.....	North line of Goodrich.....			1							
Leech.....	North line of McBoal.....			1							
Leech.....	West line of Seventh.....			1							
Leech.....	North line of Ramsey.....			1							
Lisbon.....	West line of Douglas.....			1							
Livingston.....	North line of DeLoe.....			1							
Logan.....	East line of Canton.....			1							
Louisa.....	East line of Livingston.....			1							
Locust.....	South line of Tenth.....					1					
Locust.....	North line of Seventh, M. and H.....			1				1			
L'Orient.....	North line of Thirteenth.....			1							
L'Orient.....	South line of Mt. Airy.....			1							
L'Orient.....	North line of Glencoe.....			1							
Mayall alley	West line of Seventh.....			1							
Mayall alley	East line of Ninth.....			1							
Market.....	North line of Third.....			1							
Midway.....	West line of Woodbury.....			1							
Midway.....	East line of Oakdale.....			1							
Minnesota.....	North line of Third.....			1							
Minnesota.....	South line of Fifth.....			1							
Minnesota.....	South line of Sixth.....			1							
Minnesota.....	North and south line of Seventh.....			1	1						
Minnesota.....	South line of Tenth.....			1							
Minnesota.....	South line of Eleventh.....			1							
Minnesota.....	South line of Twelfth.....			1							
Michigan.....	West line of Seventh.....			1							
Mississippi.....	North and south line of Grove.....			4					1	1	
Mississippi.....	North line of Nash.....			1							
Mississippi.....	North line of Glencoe.....			1							
Mississippi.....	At south abutment of G. N. Ry bridge			2							
Mississippi.....	At north abutment of G. N. Ry bridge,										
Mississippi.....	B. O.....			1							
Mississippi.....	South line of Capitol, D. H. and L.....			2						1	
Mississippi.....	South line of Cayuga, D. H. and L.....			2							
Mississippi.....	At N. P. Ry, M. and B. O.....			3							
Mississippi.....	North of Magnolia.....			3						1	
Mississippi.....	North of Maryland, B. O.....			1							
Mt. Airy.....	West line of Mississippi.....			1							



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
McBoal.....	West line of Wilkin.....			1							
McBoal.....	East line of Smith.....			1							
McBoal.....	East and west line of Seventh.....			2							
Nash.....	East and west line of Mississippi.....			4							
Neill.....	North line of Seventh.....		1								
Ninth.....	West line of Neill.....		1								
Ninth.....	East and west line of Locust.....		1	1							
Ninth.....	East and west line of Broadway.....			4							
Ninth.....	West line of Sibley.....			1							
Ninth.....	East and west line of Jackson.....			2							
Ninth.....	East line of Minnesota.....			1							
Ninth.....	East and west line of Cedar.....			2							
Ninth.....	East line of Wabasha.....		1								
Ninth.....	West line of St. Peter.....			1							
Ninth.....	East and west line of Fort.....			2							
Norris.....	West line of Canada.....		1								
Norris.....	East line of Temperance.....		1								
Ontario.....	At Washington.....		1								
Oakdale.....	South line of Prescott.....			1							
Oakdale.....	South line of Midway, D. H. and L.....			1							
Oneida.....	South line of Seventh.....			1							
Oneida.....	North line of Jefferson.....			1							
Overton.....	151 feet south of Como and Phalen B. O.....			1							
Overton.....	At Como and Phalen, M. and B. O.....			1						1	
Overton.....	1,562 feet north of Como and Phalen.....			1							
Overton.....	At pumping station, M. and B. O.....			1						1	1
Oleago.....	North line of Lafayette, D. H. and L.....			1							
Olive.....	South line of Seventh.....			1							
Olive.....	North and south line of Grove.....		1	1							
Olive.....	North and south line of Olmsted, D. H. and L.....			2							
Partridge.....	West line of Bradley.....		1								
Pleasant.....	East and west line of Third.....			2							
Pleasant.....	North line of Walnut.....			1							
Pleasant.....	West line of Thompson.....			1							
Pleasant.....	West line of Western.....			1							
Pen'sylv'nia.....	East and west line of Mississippi.....			3							
Pen'sylv'nia.....	West line of L'Orient.....			1							
Prescott.....	East line of Oakdale.....			1							
Pine.....	North line of Seventh.....		1								
Pine.....	North line of Eighth.....		1								
Pine.....	North line of Ninth.....		1								
Pine.....	North line of Grove.....			1							
Pine.....	North line of Olmsted.....			1							
Prince.....	East line of Broadway.....			1							
Ramsey.....	West line of Seventh.....					1					
Ramsey.....	West line of Thompson.....			1							
Ramsey.....	South line of Pleasant.....			1							
Randolph.....	East and west line of Seventh.....			1							
Richmond.....	East and west line of Victoria.....			2							
Richmond.....	South line of Seventh.....			1							
Rosatel.....	South line of Third.....			1							
Rosabel.....	South line of Fourth.....			1							
Rosabel.....	North and south line of Fifth.....			2							
Rosabel.....	South line of Sixth.....			1							
Rosabel.....	South line of Seventh.....			1							
Robert.....	North and south line of Third.....			2							
Robert.....	North line of Fourth.....			1							
Robert.....	Between Fourth and Fifth, H.....			1							
Robert.....	North line of Fifth.....			1							
Robert.....	Between Sixth and Seventh, H.....			1							
Robert.....	North and south line of Seventh.....			2							
Robert.....	North line of Eighth.....			1							
Robert.....	North line of Ninth.....			1							
Robert.....	South line of Eleventh.....			1							
Robert.....	North and south line of Twelfth.....			2							
Robert.....	South line of Fourteenth.....			1							
Robert.....	North line of Fairfield.....			1							
Robert.....	North and south line of Indiana.....			2							
Robert.....	South line of Chicago.....			1							

## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Robert.....	South line of Plato.....			1							
Robert.....	North line of Colorado.....			1							
Robert.....	North line of Delos.....			1							
Robert.....	North and south line of Isabel.....			2							
Robert.....	North line of Concord.....			1							
Robert.....	South line of George.....			1							
Robert.....	North line of Louisa.....			1							
Robie.....	West line of Anita.....			1							
Robie.....	East line of State.....			1							
Robie.....	East line of Winslow.....			1							
St. Clair.....	East and west line of Western.....			2							
St. Clair.....	East line of Seventh.....			1							
St. Peter.....	North line of Third.....			1							
St. Peter.....	North line of Fourth.....			1							
St. Peter.....	South line of Sixth.....			1							
St. Peter.....	North and south line of Seventh.....			2							
St. Peter.....	North and south line of Tenth.....			2							
St. Peter.....	North line of College, D. H. and L.....			1							
State.....	Center of proposed levee.....			1			1				
State.....	South line of Indiana.....					1					
State.....	North line of Morrison.....					1					
State.....	North line of Isabel.....			1							
State.....	North and south line of Concord.....					2					
State.....	North and south line of Louisa, M. and H.....			1			1				
State.....	South line of Elizabeth, H.....			1							
State.....	South line of Bunker, H.....			1							
State.....	South line of Page.....			1			1				
Stewart.....	South line of Tuscarora.....			1							
Sherman.....	East line of Exchange.....			1							
Sherman.....	East line of Wilkin.....			1							
Sherman.....	East and west line of Seventh.....			1							
Sherman.....	South line of Pleasant.....			1							
Seventh.....	West line of Kittson.....			1							
Seventh.....	East and west line of Locust.....			1			1				
Seventh.....	East and west line of Broadway.....						2				
Seventh.....	At Robert, B. O.....	1									
Seventh.....	East and west line of Jackson.....						2				
Seventh.....	East line of Wabasha.....					1	1				
Seventh.....	West line of Franklin.....					1					
Seventh.....	West line of Eagle.....			1		1	1				
Seventh.....	At Chestnut, H.....			1			1				
Seventh.....	At Walnut, B. O. and H.....	1		2							
Seventh.....	South and north line of Ramsey, M. and H.....			1		1	1	1			
Seventh.....	West line of Leech.....					1					
Seventh.....	South line of McBoal.....					1					
Seventh.....	At Goodrich, B. O.....	1									
Seventh.....	North line of Yankee.....					1					
Seventh.....	East line of Colborne, M. and H.....			1			1				
Seventh.....	East line of Erie, H.....			1							
Seventh.....	North line of Jefferson, B. O.....	1									
Seventh.....	South line of Palace.....						1				
Seventh.....	South line of Audubon.....						1				
Seventh.....	East line of Daly, B. O.....	1									
Seventh.....	North line of Lee, B. O.....	1									
Sibley.....	North and south line of Third.....		1	1							
Sibley.....	South line of Fifth.....			1							
Sibley.....	South line of Sixth.....			1							
Sibley.....	North and south line of Seventh.....			1	1						
Sibley.....	North line of Ninth.....			1							
Sibley.....	North line of Tenth.....			1							
Sibley.....	North line of Spruce.....			1							
Sixth.....	West line of Kittson.....			1							
Sixth.....	West line of Neill.....			1							
Sixth.....	West line of Willis.....			1							
Sixth.....	East line of John.....			1							
Sixth.....	East line of Olive.....			1							
Sixth.....	East and west line of Broadway.....					2					
Sixth.....	West line of Rosabel.....					1					
Sixth.....	East line Wacouta.....					1					

## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Sixth.....	East line of Sibley.....				1						
Sixth.....	East and West line of Jackson.....				2						
Sixth.....	East line of Robert.....				1						
Sixth.....	East line of Minnesota.....				1						
Sixth.....	East and west line of Cedar.....				2						
Sixth.....	West line of Wabasha.....				1						
Sixth.....	East line of Washington.....			1							
Sixth.....	South line Seventh.....			1							
Sixth.....	East line of Franklin.....			1							
Sixth.....	East line of Exchange.....			1							
Sixth.....	East and west line of Fort.....			2							
Sixth.....	North line of Smith.....			1							
Smith av.....	North line of Goodrich.....			1							
Smith av.....	East and west line of Seventh.....			2							
Smith av.....	North line of Forbes.....			1							
Smith av.....	North line of Ramsey.....			1							
Smith av.....	North line of Sherman.....			1							
Smith av.....	North line of Walnut.....			1							
Smith av.....	North and south line of Third.....			2							
Smith av.....	North line of Sixth.....			1							
Somerset.....	East line of Pine.....			1							
Somerset.....	West line of John.....			1							
Spruce.....	East line of Broadway.....		2								
Summit.....	East line of Minnesota.....			1							
Stryker.....	North line of George, D. H. and L.....			2							
Stryker.....	North line of Winifred.....			1							
Stryker.....	North and south line of Isabel.....			2							
Tenth.....	West line of Locust.....					1					
Tenth.....	West line of Olive.....					1					
Tenth.....	East and west line of Broadway.....			2		3					
Tenth.....	West line of Canada.....					1					
Tenth.....	West line of Sibley.....					1					
Tenth.....	East and west line of Jackson.....		1			1					
Tenth.....	West line of Robert.....		1								
Tenth.....	East and west line of Cedar, M. and H.....		1	1							
Tenth.....	East line of Wabasha, B. O.....		1								
Tenth.....	West line of St. Peter, M. and H.....		1					1			
Tenth.....	West line of Fort.....			1							
Tennessee.....	East line of State.....			1							
Twelfth.....	West line of Jackson, H. and B. O.....		2								
Twelfth.....	East line of Cedar, H.....		1								
Twelfth.....	West line of Minnesota, H.....		1								
Temperance.....	North line of Eighth.....		1								
Temperance.....	North line of Tenth.....		1								
Temperance.....	North and south line of Grove.....		2								
Third.....	East and west line of Broadway.....					2					
Third.....	East line of Wacouta.....					1					
Third.....	East and west line of Jackson.....					2					
Third.....	West line of Minnesota.....					1					
Third.....	East line of St. Peter.....					1					
Third.....	East and west line of Washington.....					2					
Third.....	South line of Seventh.....					1					
Third.....	West line of Fort.....			1							
Third.....	North line of Pleasant, D. H. and L.....			1							
Thirteenth.....	East and west line of Mississippi.....			4							
Thirteenth.....	East and west line of Canada.....			2							
Thirteenth.....	East line of Jackson.....			1							
Thompson.....	North line of Ramsey.....			1							
Toronto.....	East and west line of Seventh.....			2							
Tuscarora.....	West line of Warren.....			1							
Tuscarora.....	East and west line of Seventh.....			2							
Tuscarora.....	West line of Victoria.....			1							
Van Slyke ct.....	East line of Broadway.....		2								
View.....	North line of Seventh.....			1							
View.....	South line of Armstrong.....			1							
View.....	South line of Juno.....			2							
View.....	North and south line of Randolph.....			1							
View.....	North line of James.....			1							
Von Minden.....	East line of Western.....			1							
Wabasha.....	North and south line of Third.....			2							
Wabasha.....	North and south line of Fifth.....			2							



## LOCATION OF VALVES (LOW SERVICE).—Continued.

STREET.	LOCATION.	3-Inch.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Wabasha...	North line of Sixth.....			1							
Wabasha...	At Seventh.....			1							
Wabasha...	North line of Ninth.....			1							
Wabasha...	South line of Exchange.....			1							
Wabasha...	North and south line of Tenth.....			1							
Wabasha...	North line of College.....			1							
Wabasha...	North and south line of Indiana.....			1							
Wabasha...	North line of Plato.....			1							
Wabasha...	North line of Colorado.....			1							
Wabasha...	North and south line of Isabel.....			2							
Warsaw...	East line of Seventh.....			1							
Warsaw...	North line of Randolph.....			1							
Waverly pl.	West line of Lafayette.....			1							
Waverly pl.	East line of John.....			1							
Washington.	North line of Chestnut.....		1								
Washington.	North and south line of Third.....				2						
Washington.	North line of Fourth.....				1						
Washington.	North line of Fifth.....				1						
Washington.	South line of Seventh.....				1						
Watson.....	East and west line of Victoria.....		2								
Wacouta....	North and south line of Third.....		1		1						
Wacouta....	South line of Fifth.....			1		1					
Wacouta....	South line of Sixth.....				1						
Wacouta....	North and south line of Seventh.....				2						
Wacouta....	North and south line of Eighth.....		1		1						
Wacouta....	North line of Tenth.....		1			1					
Walnut.....	East line of Exchange.....		1			1					
Walnut.....	East and west line of Seventh.....		2								
Walnut.....	East line of Pleasant.....		1								
Webster....	South line of Seventh.....			1							
Webster....	North line of Jefferson.....			1							
Western....	East and west line of Seventh.....		2								
Western....	North line of Goodhue.....		1								
Western....	North and south line of Goodrich.....		2								
Western....	North line of Harrison.....		1								
W. & S. add	Alley block 15, at Wacouta.....		1								
Wilkin.....	North line of Forbes.....		1								
Wilkin.....	At edge of bluff, B. O.....		1								
Willis.....	North line of Fifth.....			1							
Willis.....	South line of Seventh.....			1							
Williams....	East line of Mississippi, D. H. and L.....		2								
Winifred....	East line of Bancroft.....		1								
Winifred....	West line of Anita.....		1								
Winifred....	East and west line of State.....		2								
Winifred....	East line of Clinton.....		1								
Winifred....	East line of Concord.....		1								
Winifred....	West line of Hall.....		1								
Winifred....	East line of Winslow.....		1								
Winifred....	East line of Bellows.....		1								
Winifred....	East line of Charlton.....		1								
Winslow....	North line of Isabel.....		1								
Woodward..	West line of Bradley.....		1								
Woodward..	West line of Lafayette.....		1								
Yankee....	West line of Douglas.....		1								
Yankee....	East line of Seventh.....		1								
Main line..	Gate house, Lake Phalen.....								1		
Main line..	South line Omaha Ry. R. V. and B. O.....		2								
Main line..	Seventh, west line of Frank.....								1		
Main line..	Seventh, east line of Earl.....		1					1			
Main line..	East of Duchess, B. O.....		1								
Main line..	At Bohn's lumber yard, H.....		3								
Main line..	East of Greenbrier, B. O.....		1								
Main line..	At Payne and Ross.....						1				
Totals .....		15	113	436	26	76	37	10	5	5	1

Number of valves laid this year..... 4  
 Number of valves transferred to H. S..... 22  
 Total number of valves on low service..... 724

TABLE NO. 16.

## LOCATION OF VALVES (HIGH SERVICE, WEST ST. PAUL.)

STREET.	LOCATION.	6 Inch.	12-Inch.	16-Inch.
Baker.....	West line of Bidwell.....		1	
Baker.....	West line of Charlton.....		1	
Baker.....	East and west line of Manomin.....		2	
Baker.....	East line of Cherokee.....		1	
Belvidere.....	East line of Robert.....	1		
Bidwell.....	South line of Baker.....			1
Bunker.....	West line of Mt. Hope.....	1		
Cherokee.....	South line of Winona.....	1		
Cherokee.....	North line of Belmont.....	1		
Cherokee.....	North line of Page.....	1		
Cherokee.....	North and south line of Baker.....	2		
Cherokee.....	North line of Stevens.....	1		
Curtis.....	West line of Mt. Hope.....	1		
Curtis.....	West line of Woodbury.....	1		
George.....	East and west line of Bidwell.....	2		
George.....	West line of Bellows.....	1		
George.....	West line of Waseca.....	1		
George.....	West line of Charlton.....	1		
George.....	West line of Ohio.....	1		
George.....	East and west line of Manomin.....	2		
Hall.....	North line of Morton.....	1		
Manomin.....	North line of Annapolis.....		1	
Manomin.....	South line of Sidney.....		1	
Manomin.....	South line of Baker.....		1	
Morton.....	East line of Hall.....			1
Oakdale.....	North line of Gates.....	1		
Oakdale.....	North line of Page.....	1		
Oakdale.....	North line of Curtice.....	1		
Ohio.....	North line of Belmont.....	1		
Ohio.....	North line of Page.....	1		
Ohio.....	North and south line of Baker.....	2		
Ohio.....	North line of Stevens.....	1		
Ohio.....	North line of Robie.....	1		
Ohio.....	North line of Alice.....	1		
Orleans.....	North and south line of Baker.....	2		
Orleans.....	North line of Stevens.....	1		
Orleans.....	South line of Robie.....	1		
Page.....	East and west line of State, M. and H.....	2		
Page.....	East line of Oakdale.....	1		
Robert.....	North and south line of Page.....			2
Robie.....	West line of Bidwell.....	1		
Smith.....	South line of Baker.....			1
State.....	South line of Page.....	2		
Stryker.....	North and south line of Morton.....			
Total.....		40	8	5

Number of valves laid this year, 2. Total number of valves on high service West St. Paul, 53. Total number of valves on high, low and high service West St. Paul, 53.

Reference:—M, main; B. O., blow-off; H., on hydrant; H. B. on hydrant branch; D. H. and L., dividing between high and low service; B. W., by-way; C. V., check valve; R. V., relief valve; M. H., manhole.



TABLE NO. 17.  
LIST OF HYDRANTS.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1	Woodward and Monroe, s. e. cor.....	37				g	
2	Grove and Lafayette, n. w. cor.....	39				g	
3	Westminster and Waverly, n. w. cor.....	35				g	
4	Westminster, 400 feet north of Waverly...	36				g	
5	Grove and Olive, n. e. cor.....	37				g	
6	John and Somerset, n. w. cor.....	35				g	
7	Olive and Somerset, n. w. cor.....	35				g	
8	Pine and Thirteenth, n. w. cor.....	37				g	
9	Thirteenth and Mississippi, s. e. cor.....	36				g	
10	Grove and Mississippi, n. w. cor.....		40			g	20
11	Van Slyke P. and Pine, s. w. cor.....	38				g	
12	Canada and Grove, s. w. cor.....	34				g	
13	Canada and Spruce, s. w. cor.....	37				g	
14	Grove, between Canada and Temperance..		37			g	20
15	Jackson and Grove, n. e. cor.....		32			g	
16	Robert and Twelfth, s. e. cor.....	27				g	
17	Robert and Eleventh, n. e. cor.....	26				g	
18	Eleventh and Minnesota, n. e. cor.....	23				g	
19	Eleventh and Cedar, n. e. cor.....	25				g	
20	College and Wabasha, s. w. cor.....		27			g	
21	Wabasha and Tenth, n. w. cor.....		29			g	
22	St. Peter and Tenth, s. w. cor.....		27			g	
23	St. Peter and College, n. w. cor.....			79		g	
24	St. Peter and Summit, n. w. cor.....			68		g	
25	Tenth and College, s. w. cor.....		21			g	
26	Tenth, between St. Peter and Fort.....		27			g	20
27	St. Peter and Exchange, s. w. cor.....		31			g	
28	Wabasha and Exchange, n. w. cor.....		31			g	
29	St. Peter and Ninth, s. w. cor.....		33			g	
30	Wabasha and Ninth, s. w. cor.....		33			g	
31	Ninth and Jackson, n. e. cor.....	35				g	
32	Ninth and Sibley, n. w. cor.....	38				g	
33	Ninth and Canada, n. e. cor.....	40				g	
34	Ninth and Pine, s. w. cor.....	43				g	
35	Ninth and John, s. w. cor.....	41				g	
36	Ninth and Locust, s. w. cor.....	42				g	
37	Eighth and Neill, n. e. cor.....	43				g	4
38	Fifth and Locust, n. e. cor.....	54				g	
39	Eighth and Olive, n. w. cor.....	42				g	8
40	Broadway and Eighth, n. w. cor.....	41				g	6
41	Eighth and Wacouta, n. e. cor.....	41				g	8
42	Jackson and Eighth, n. e. cor.....	40				D.	12
43	Robert and Eighth, s. e. cor.....	40				g	6
44	Burr and Partridge, s. e. cor.....	37				g	6
45	Burr and Hopkins, s. e. cor.....	34				g	6
46	De Soto and Hopkins, n. e. cor.....	35				g	6
47	Third and Smith ave., n. e. cor.....		31			g	6
48	Third and Pleasant, n. e. cor.....		26			g	6
49	College and Third, n. e. cor.....			71		g	6
50	Exchange and Sherman, s. e. cor.....		39			g	4
51	Walnut and Exchange, n. e. cor.....		42			g	4
52	Sherman and Seventh, s. e. cor.....		37			g	6
53	Seventh and Walnut, s. e. cor.....		41			D.	20
54	Chestnut and Seventh, n. e. cor.....		38			g	6
55	Fort and Third, n. w. cor.....		34			g	20
56	Fourth and Seventh, s. e. cor.....		34			g	16
57	Seventh and Exchange, s. w. cor.....		34			D.	16
58	Seventh and Fifth, s. w. cor.....		33			D.	16
59	Seventh and Franklin, s. w. cor.....		32			D.	16
60	Seventh and Sixth, s. e. cor.....		33			D.	16

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Ph len Lake.	Valve's Lake.	Rees- volr.	West Side.		
61	Seventh and St. Peter, n. e. cor.		34			D.	16
62	Seventh and Wabasha, n. w. cor.		35			D.	16
63	Cedar and Seventh, n. w. cor.		41			S.	12
64	Seventh and Minnesota, n. w. cor.		44			S.	16
65	Seventh and Robert, n. w. cor.		45			D.	16
66	Jackson and Seventh, n. e. cor.	42				D.	12
67	Seventh and Sibley, n. w. cor.		45			D.	16
68	Seventh and Wacouta, n. e. cor.		44			D.	16
69	Seventh and Rosabel, n. w. cor.		49			D.	16
70	Broadway and Seventh, s. w. cor.		44			S.	16
71	Seventh and Pine, s. w. cor.	40				D.	16
72	Seventh and Olive, s. w. cor.	40				D.	16
73	Seventh and John, s. w. cor.	42				D.	16
74	Seventh and Locust, s. w. cor.	43				D.	16
75	Seventh and Neill, s. e. cor.	46				S.	6
76	Willius and Sixth, n. e. cor.	47				S.	4
77	Sixth and Pine, s. e. cor.	41				S.	4
78	Jackson and Sixth, n. e. cor.		46			D.	12
79	Robert and Sixth, n. e. cor.		46			S.	6
80	Sixth and Minnesota, s. e. cor.		44			S.	8
81	Sixth and Wabasha, n. w. cor.		31			S.	6
82	Fifth and Washington, s. e. cor.		32			S.	6
83	Fifth and Wabasha, n. w. cor.		34			S.	6
84	Cedar, 100 feet south of Fifth, s. w. cor.		42			D.	12
85	Fifth and Minnesota, n. e. cor.		44			S.	12
86	Robert and Fifth, s. e. cor.		46			S.	6
87	Jackson and Fifth, s. e. cor.		47			D.	12
88	Fourth and Sibley, n. e. cor.		54			S.	6
89	Jackson and Fourth, s. e. cor.		52			D.	12
90	Fourth and Robert, n. w. cor.		46			S.	6
91	Fourth and Minnesota, n. w. cor.		45			S.	6
92	Fourth and Wabasha, n. w. cor.		32			S.	6
93	Washington and Fourth, n. w. cor.		33			S.	12
94	Third and Exchange, n. w. cor.		35			S.	12
95	Third, between Exchange and Franklin.		35			S.	12
96	Third and Franklin, n. e. cor.		34			S.	12
97	Third and Washington, n. e. cor.		34			S.	12
98	Third and Market, n. e. cor.		33			S.	12
99	Washington and Eagle, n. w. cor.		64			S.	4
100	Third and St. Peter, n. e. cor.		33			S.	12
101	Wabasha and Third, n. w. cor.		33			S.	6
102	Cedar and Third, n. w. cor.		33			S.	12
103	Third and Minnesota, n. e. cor.		40			D.	12
104	Third and Robert, n. w. cor.		47			D.	12
105	Third and Jackson, s. e. cor.		54			S.	12
106	Sibley and Third, s. w. cor.		62			D.	6
107	Jackson and Levee, n. e. cor.		67			S.	6
108	Jackson and Tenth, n. e. cor.	31				S.	12
109	Jackson and Eleventh.	30				S.	12
110	Sibley and Levee, n. w. cor.		69			S.	4
111	St. Peter and Fifth, n. w. cor.		53			S.	6
112	Ninth and Robert, n. e. cor.	32				S.	6
113	Tenth and Wacouta, n. w. cor.	38				S.	12
114	Mississippi and Nash, n. w. cor.		35			S.	6
115	Broadway and Twelfth.		40			S.	6
116	Broadway and Tenth, s. w. cor.	40				S.	6
117	Elm and Franklin, n. e. cor.		37			S.	4
118	Ninth and Cedar, n. w. cor.	32				S.	6
119	Fourth and St. Peter, n. w. cor.		32			S.	6
120	Sixth and Cedar, s. e. cor.		43			D.	8
121	Fourth and Franklin, n. e. cor.		33			S.	6
122	Seventh and Leach, s. w. cor.		35			S.	12

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Rose-ville.	West Side.		
123	Grove and John, n. e. cor.	37				S.	6
124	Grove and Pine, n. w. cor.	37				S.	6
125	Canada and Tenth, s. w. cor.	38				S.	6
126	Ninth and Wacouta, n. w. cor.	39				S.	6
127	Eighth and Temperance, n. e. cor.	42				S.	8
128	Seventh and Willis, s. e. cor.	45				S.	6
129	Seventh and Kittson, s. w. cor.	48				S.	6
130	Ramsey and Leech		36			S.	6
131	Collins and Lafayette, n. e. cor.			87		S.	6
132	Sibley and Sixth, s. w. cor.		47			S.	6
133	Willis and Fifth, n. e. cor.	55				S.	4
134	Eighth and Willis, n. e. cor.	42				S.	4
135	Sibley and Tenth; s. e. cor.	37				S.	4
136	Pleasant, between Third and Chestnut.		28			S.	6
137	Pleasant and Chestnut, n. w. cor.		29			S.	6
138	Pleasant and Walnut, n. w. cor.		30			S.	6
139	Smith ave., between Third and Chestnut.		31			S.	6
140	Fort, between Ninth and Tenth.		30			S.	20
141	Fort and Ninth, s. w. cor.		29			S.	20
142	Fort and Sixth, s. w. cor.		32			S.	20
143	Fort and Fifth, s. w. cor.		33			S.	20
144	Canada and Thirteenth, s. w. cor.		39			S.	6
145	Thirteenth, bet. Canada and Temperance.		37			S.	6
146	Thirteenth and Temperance.		36			S.	6
147	Mississippi and Mt. Airy, n. w. cor.		33			S.	6
148	Mississippi and Glencoe, n. w. cor.		30			S.	6
149	Mississippi, bet. Glencoe and Pennsylvania		29			S.	6
150	Mississippi and Pennsylvania, n. w. cor.		26			S.	6
151	Pine and Nash, s. w. cor.	36				S.	6
152	Olmstead and Pine, n. e. cor.	35				S.	6
153	Olmstead and Olive, n. w. cor.	37				S.	6
154	Olmstead and John, n. w. cor.	37				S.	6
155	Ninth and Exchange, n. e. cor.		31			S.	6
156	Ninth and Franklin, n. e. cor.		32			S.	6
157	Wabasha and Summit, s. w. cor.		19			S.	6
158	Robert and Tenth, n. e. cor.	27				S.	6
159	Canada and Norris, s. w. cor.	32				S.	6
160	Norris and Sibley	34				S.	4
161	Spruce and Wacouta	37				S.	4
162	Spruce and Sibley	35				S.	4
163	College, between St. Peter and Tenth.		22			S.	6
164	Fourth and Wacouta, n. w. cor.		58			S.	6
165	Sibley and Fifth, s. w. cor.		50			S.	6
166	Walnut and Smith avenue, n. e. cor.		36			S.	4
167	Fourth and Rosabel, n. w. cor.		62			S.	6
168	Broadway, 150 feet south of Third.		69			S.	16
169	Third and Broadway, n. e. cor.		67			D.	12
170	Third and Rosabel, n. w. cor.		66			D.	12
171	Third and Wacouta, n. w. cor.		64			D.	12
172	Rice and Summit, s. w. cor.			72		S.	6
173	Fourth and Market, n. w. cor.		32			S.	6
174	Collins and Bedford, n. w. cor.			80		S.	6
175	Burr and Collins, n. w. cor.			81		S.	6
176	Tenth and Pine, n. w. cor.	40				S.	6
177	Tenth and Olive, n. w. cor.	41				S.	12
178	Tenth and John, n. w. cor.	40				S.	12
179	Canada and Fourteenth, n. w. cor.		37			S.	6
180	Fourteenth, between Canada and Jackson.		37			S.	6
181	Partridge and Bradley, n. w. cor.	35				S.	4
182	Fourth and Broadway, n. w. cor.		62			S.	6
183	Exchange and Sixth, s. w. cor.		32			S.	4
184	North and Burr			81		S.	6
185	North and De Soto, n. e. cor.			87		S.	6
186	Rosabel and Fifth, n. w. cor.		55			S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadina's Lake.	Reaper Votr.	West Side.		
187	Rosabel and Sixth, n. w. cor.		48			S.	6
188	Pleasant and Sherman		33			S.	6
189	Fourth and Jackson, n. w. cor.		51			S.	6
190	John and Fourth, n. e. cor.	62				S.	6
191	John and Fifth, n. e. cor.	53				S.	6
192	John and Sixth, n. e. cor.	43				S.	6
193	Bruno and Lafayette, s. e. cor.	37				S.	6
194	Canada and University, s. w. cor.		30			S.	6
195	Becker and Lafayette, s. e. cor.	30				S.	6
196	Pleasant and Sixth, s. w. cor.		24			S.	6
197	Jackson and Thirteenth, n. e. cor.		34			S.	6
198	Jackson and Fourteenth, n. e. cor.		31			S.	6
199	Wilkin and McBoal, s. w. cor.		36			S.	6
200	Wacouta and Third, s. cor.		65			S.	6
201	McBoal and Leech, n. w. cor.		35			S.	12
202	Wacouta and Sixth, n. e. cor.		48			S.	12
203	Wacouta and Fifth, n. e. cor.		52			S.	12
204	Fifth and Broadway, n. w. cor.		53			S.	12
205	Sixth and Broadway, s. w. cor.		50			D.	8
206	Tenth and Minnesota, n. e. cor.	27				S.	6
207	Tenth and Cedar, n. e. cor.	26				S.	6
208	Jackson and University, s. e. cor.		23			S.	6
209	Cedar and Eighth, n. w. cor.		40			S.	12
210	Cedar and Exchange, n. w. cor.		32			S.	12
211	Ninth and Minnesota, n. e. cor.	34				S.	6
212	Wilkin and Forbes, n. w. cor.		37			S.	6
213	Fifth and Neill, n. e. cor.	50				S.	6
214	Kittson and Fifth, n. w. cor.	54				S.	6
215	Kittson and Sixth, n. w. cor.	53				S.	6
216	Sixth and Neill, s. e. cor.	50				S.	4
217	Otsego and Mt. Ida, n. w. cor.			72		S.	6
218	Bradley and Woodward, n. w. cor.	38				S.	6
219	Bradley and North, s. w. cor.	31				S.	6
220	Hopkins and Bradley, n. w. cor.	33				S.	6
221	Smith avenue and Chestnut, s. w. cor.		34			S.	6
222	Bedford and Beaumont, s. w. cor.			84		S.	6
223	Bedford and Minnehaha, s. w. cor.			77		S.	6
224	Thompson and Pleasant, s. w. cor.		34			S.	6
225	Thompson and Ramsey, n. w. cor.		35			S.	6
226	Smith avenue and Forbes, n. w. cor.		34			S.	6
227	Fourth and Cedar, n. w. cor.		30			S.	6
228	Eighth and Minnesota, n. w. cor.	37				S.	4
229	Beaumont and Bradley, n. w. cor.			82		S.	6
230	Beaumont and De Soto, n. e. cor.			81		S.	6
231	Burr and Beaumont, n. w. cor.			79		S.	6
232	Burr and Minnehaha, n. w. cor.			75		S.	6
233	Burr and Fauquier, s. w. cor.			83		S.	6
234	Smith avenue and Seventh st., s. w. cor.		34			S.	6
235	Fourth and Pine, n. e. cor.		50			S.	12
236	Fourth and Olive, n. w. cor.		64			S.	12
237	Forbes and Seventh, n. e. cor.		34			S.	6
238	Fourth and Exchange, n. e. cor.		34			S.	6
239	McBoal and Seventh, n. e. cor.		33			S.	6
240	St. Peter and Sixth, s. w. cor.		33			S.	6
241	Prince and Pine, n. w. cor.		65			S.	6
242	Prince and Olive		65			S.	6
243	Prince and John		60			S.	6
244	Mt. Airy and L'Orient, n. e. cor.		21			S.	6
245	Smith avenue and Fifth, n. w. cor.		31			S.	6
246	Smith avenue and Sixth, n. w. cor.		29			S.	6
247	Smith avenue and College, s. w. cor.		18			S.	6
248	Douglas and Seventh, s. w. cor.		84			S.	6
249	Goodrich and Seventh, n. e. cor.		84			S.	6
250	Goodrich and Smith avenue, n. e. cor.		88			S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	River- valf.	West Side.		
251	Goodrich and Leech, n. w. cor.....		41			5.	6
252	Capitol and Mississippi, n. w. cor.....			75		5.	6
253	Genesee and Mississippi, n. w. cor.....			79		5.	6
254	Granite and Mississippi, n. w. cor.....			84		5.	6
255	Second and Robert, n. e. cor.....		57			5.	6
256	Pleasant and Ramsey.....		32			5.	6
257	Ramsey and Douglas.....		34			5.	6
258	Sherman and Franklin, s. e. cor.....		38			5.	6
259	Chestnut and Exchange, n. e. cor.....		49			5.	6
260	Exchange and Eagle, s. w. cor.....		50			5.	4
261	Williams and Pine, n. e. cor.....			73		5.	6
262	Pine, 200 feet south of Williams.....			60		5.	6
263	Topping and Como, n. w. cor.....			56		5.	6
264	Capitol and Western, n. w. cor.....			54		5.	6
265	Blair and Western, n. w. cor.....			57		5.	6
266	Thomas and Western, n. w. cor.....			55		5.	6
267	University and Western, n. w. cor.....			56		5.	12
268	Aurora and Western, n. w. cor.....			54		5.	6
269	Fuller and Western, n. w. cor.....			52		5.	6
270	Martin and Western, n. w. cor.....			51		5.	6
271	St. Anthony and Western, n. w. cor.....			54		5.	6
272	Rondo and Western, n. w. cor.....			57		5.	6
273	Carroll and Western, n. w. cor.....			46		5.	6
274	Iglehart and Western, n. w. cor.....			36		5.	6
275	Marshall and Western, n. w. cor.....			32		5.	6
276	Dayton and Western, n. e. cor.....			31		5.	12
277	Western and Selby, n. w. cor.....			32		5.	12
278	Western and Laurel, n. w. cor.....			31		5.	12
279	Western and Ashland, n. w. cor.....			33		5.	12
280	Western and Holly, n. w. cor.....			34		5.	12
281	Western and Portland, n. w. cor.....			34		5.	12
282	Summit and Portland.....			34		5.	12
283	Summit and Arundel, n. e. cor.....			31		5.	12
284	Summit and Mackubin, n. e. cor.....			30		5.	12
285	Summit and Kent, n. e. cor.....			36		5.	12
286	Summit and Oakland.....			35		5.	12
287	Holly and Dale, n. e. cor.....			36		5.	6
288	Holly and Kent, n. e. cor.....			34		5.	6
289	Holly and Mackubin, n. e. cor.....			32		5.	6
290	Holly and Arundel, n. e. cor.....			33		5.	6
291	Ashland and Arundel, n. e. cor.....			32		5.	6
292	Ashland and Mackubin, n. e. cor.....			30		5.	6
293	Ashland and Kent, n. e. cor.....			33		5.	6
294	Ashland and Dale, n. e. cor.....			37		5.	6
295	Laurel and Dale, n. e. cor.....			35		5.	6
296	Laurel and Kent, n. e. cor.....			31		5.	6
297	Laurel and Mackubin, n. w. cor.....			30		5.	6
298	Laurel and Arundel, n. e. cor.....			30		5.	6
299	Dayton and Dale, n. e. cor.....			30		5.	12
300	Dayton and Kent, n. e. cor.....			28		5.	12
301	Dayton and Mackubin, n. e. cor.....			29		5.	12
302	Dayton and Arundel, n. e. cor.....			33		5.	12
303	Dayton and Virginia, n. e. cor.....			30		5.	12
304	Dayton and Farrington, n. e. cor.....			30		5.	12
305	Dayton, between Summit and Farrington..			31		5.	12
306	Summit and Dayton, s. w. cor.....			43		5.	6
307	Summit and Selby, s. w. cor.....			37		5.	6
308	Summit, head of Walnut.....			37		5.	6
309	Summit and Nina, n. w. cor.....			33		5.	6
310	Summit and Farrington, n. w. cor.....			31		5.	6
311	Summit and Virginia, n. w. cor.....			33		5.	6
312	Farrington and Laurel, n. w. cor.....			32		5.	6
313	Farrington and Selby avenue, s. w. cor....			31		5.	6
314	Selby and Nina.....			32		5.	6



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LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street M. in.
		Low Service.		High Service.			
		Ishel Lake.	Vadna's Lake.	Reer- voir.	West Side.		
315	Nina and Laurel, n. w. cor.			32		S.	6
316	Westminster, 200 feet south of G. N. Ry.	27				S.	6
317	Thirteenth and Broadway, n. w. cor.		30			S.	6
318	Temperance and Norris, n. e. cor.	34				S.	4
319	Banfil and Seventh, n. e. cor.		33			S.	4
320	Goodhue and Seventh, n. e. cor.		33			S.	4
321	Yankee and Seventh, n. e. cor.		34			S.	4
322	Western and Seventh, s. w. cor.		35			S.	6
323	St. Clair and Seventh, n. e. cor.		34			S.	6
324	Richmond and Seventh, s. w. cor.		34			S.	6
325	Seventh and Colborne, s. e. cor.		36			S.	16
326	Chestnut and Franklin, n. w. cor.		52			S.	6
327	Twelfth and Jackson, n. w. cor.		32			S.	20
328	Twelfth and Minnesota, n. w. cor.		29			S.	20
329	Twelfth and Cedar, n. e. cor.		27			S.	20
330	Cedar and Summit, s. w. cor.		23			S.	6
331	Chestnut and Washington, n. w. cor.		62			S.	6
332	Laurel and Virginia, n. w. cor.			32		S.	6
333	Selby and Virginia, n. w. cor.			32		S.	6
334	Mackubin and Laurel, s. w. cor.			30		S.	6
335	Portland and Arundel, n. e. cor.			32		S.	6
336	Portland and Mackubin, n. e. cor.			29		S.	6
337	Portland and Kent, n. e. cor.			34		S.	6
338	Portland and Dale, n. e. cor.			34		S.	6
339	Selby and Arundel, n. e. cor.			33		S.	6
340	Selby and Mackubin, n. e. cor.			29		S.	6
341	Selby and Kent, n. e. cor.			29		S.	6
342	Selby and Dale, n. e. cor.			31		S.	6
343	Carroll and Arundel, n. w. cor.			36		S.	6
344	Carroll and Mackubin, n. e. cor.			34		S.	6
345	Carroll and Kent, n. e. cor.			30		S.	6
346	Kent and Iglehart, n. w. cor.			29		S.	4
347	Marshall and Dale, n. e. cor.			31		S.	6
348	Marshall and Kent, n. e. cor.			27		S.	6
349	Marshall and Mackubin, n. w. cor.			31		S.	6
350	Rondo and Arundel, n. w. cor.			55		S.	6
351	Rondo and Mackubin, n. e. cor.			42		S.	6
352	Iglehart and Arundel, n. w. cor.			31		S.	6
353	Iglehart and Mackubin, n. e. cor.			33		S.	6
354	Marshall and Arundel, n. w. cor.			31		S.	6
355	McBoal and Douglas, n. e. cor.		33			S.	6
356	Douglas and Harrison, n. w. cor.		33			S.	6
357	Summit and Third.			50		S.	12
358	Summit and Nelson, n. w. cor.			52		S.	12
359	College and Sixth, s. e. cor.			70		S.	6
360	Nelson and Virginia, n. w. cor.			30		S.	6
361	Nelson and Farrington, n. w. cor.			31		S.	6
362	Nelson and Louis, n. w. cor.			43		S.	6
363	Nelson and Summit place, n. w. cor.			48		S.	6
364	Carroll and Virginia, n. w. cor.			48		S.	6
365	Carroll and Farrington, n. e. cor.			50		S.	6
366	Carroll and Louis, n. w. cor.			56		S.	6
367	Carroll and Summit place, n. w. cor.			60		S.	6
368	Carroll and Ravoux, n. e. cor.			63		S.	6
369	Park place Park.			67		S.	4
370	Iglehart and Virginia, n. w. cor.			39		S.	6
371	Iglehart and Farrington, n. w. cor.			40		S.	6
372	Iglehart and Louis, n. w. cor.			50		S.	6
373	Douglas and Lisbon, n. w. cor.		35			S.	6
374	Iglehart and St. Peter, n. w. cor.			65		S.	6
375	Iglehart and Wabasha, n. w. cor.			72		S.	6
376	Iglehart and Summit place, n. e. cor.			54		S.	6
377	Iglehart and Ravoux, n. e. cor.			63		S.	6
378	Iglehart and Rice, n. w. cor.			68		S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
379	Rice and Rondo, n. w. cor.....			65		z.	16
380	Rice and St. Anthony, n. w. cor.....			57		z.	16
381	Rice and Martin, n. w. cor.....			58		z.	16
382	Rice and Fuller, n. w. cor.....			57		z.	16
383	Rice and Aurora, n. w. cor.....			57		z.	16
384	Rice and University, n. w. cor.....			54		z.	20
385	Rice and Sherburne, n. w. cor.....			53		z.	20
386	Rice and Charles, n. w. cor.....			55		z.	20
387	Rice and Edmund, n. w. cor.....			56		z.	20
388	Rice and Como, n. w. cor.....			56		z.	12
389	Tilton and St. Peter, n. w. cor.....			61		z.	6
390	Smith avenue and Ramsey.....		35			z.	6
391	St. Peter and Martin, n. w. cor.....			60		z.	6
392	Martin and Park, n. w. cor.....			62		z.	6
393	Central and Wabasha, n. w. cor.....			66		z.	6
394	Tilton and Wabasha, n. w. cor.....			67		z.	6
395	Central and Cedar, n. w. cor.....			60		z.	6
396	Aurora and Cedar, n. e. cor.....			53		z.	6
397	Aurora and Robert, n. w. cor.....			67		z.	6
398	Smith avenue and Sherman, n. e. cor.....		36			z.	6
399	Bradley and Seventh, n. w. cor.....	37				z.	6
400	Broadway and Fourteenth, n. w. cor.....		38			z.	4
401	Summit and Dale, n. w. cor.....			33		z.	12
402	Seventh and Brook.....	46				z.	6
403	Tenth and Cedar, n. w. cor.....		29			z.	20
404	Grand and Lawton, n. w. cor.....			34		z.	6
405	Grand and Floral, n. w. cor.....			31		z.	6
406	Grand and Oakland, n. w. cor.....			46		z.	6
407	Grand and Dale, n. w. cor.....			38		z.	6
408	Grand and St. Albans, n. w. cor.....			37		z.	6
409	Valley and Broadway, n. w. cor.....			80		z.	16
410	Grand and Grotto, n. w. cor.....			33		z.	6
411	Grand and Avon, n. w. cor.....			31		z.	6
412	Grand and Victoria, n. e. cor.....			32		z.	6
413	University and Marion, n. e. cor.....			59		z.	12
414	University and Gaultier, n. w. cor.....			57		z.	12
415	University and Farrington, n. e. cor.....			57		z.	12
416	University and Virginia, n. w. cor.....			57		z.	12
417	Marshall and St. Albans, n. e. cor.....			35		z.	12
418	University and Arundel, n. e. cor.....			53		z.	12
419	Dayton and St. Albans, n. e. cor.....			33		z.	6
420	Dayton and Grotto, n. e. cor.....			33		z.	6
421	Dayton and Avon, n. e. cor.....			31		z.	6
422	Dayton and Fisk, n. e. cor.....			34		z.	6
423	St. Peter and Aurora, s. w. cor.....			54		z.	6
424	St. Peter and University, s. w. cor.....			53		z.	6
425	Park and University, n. w. cor.....			52		z.	6
426	Cedar and University, n. w. cor.....			45		z.	6
427	Cedar and Sherburne, n. w. cor.....			35		z.	6
428	Sherburne, 350 feet east of Cedar.....			36		z.	4
429	Hoffman and Seventh, s. w. cor.....			83		z.	6
430	Fourth, 400 feet west of Maria.....			89		z.	6
431	Maria and Seventh, s. w. cor.....			69		z.	6
432	Maria and Sixth, n. w. cor.....			68		z.	6
433	Maria and Fifth, n. w. cor.....			67		z.	6
434	Maria and Fourth, n. w. cor.....			69		z.	6
435	Maria and Third, n. w. cor.....			70		z.	6
436	Maria and Conway, n. w. cor.....			72		z.	6
437	Maria and Ravine, n. w. cor.....			73		z.	6
438	Maria and Euclid, n. w. cor.....			74		z.	6
439	Maria and Hudson, n. w. cor.....			73		z.	6
440	Bates and Plum, n. w. cor.....			66		z.	12
441	Bates and Hudson, n. w. cor.....			63		z.	12
442	Bates and Euclid, n. w. cor.....			61		z.	12

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
443	Bates and Ravine, n. w. cor.			59		S.	12
444	Bates and Conway, n. w. cor.			50		S.	12
445	Bates and Third, n. w. cor.			62		S.	12
446	Bates and Fourth, n. w. cor.			60		S.	12
447	Bates and Fifth, n. w. cor.			57		S.	12
448	Bates and Sixth, n. w. cor.			55		S.	12
449	Bates and Seventh, s. w. cor.			60		S.	12
450	Fifth and Maple, n. w. cor.			44		S.	6
451	Third and Maple, n. w. cor.			46		S.	6
452	Hudson and Maple, n. w. cor.			47		S.	6
453	Valley and Canada.			75		S.	16
454	Seventh and Maple, n. e. cor.			48		S.	16
455	Seventh and Hope, n. w. cor.			40		S.	16
456	Seventh and Margaret, n. e. cor.			42		S.	16
457	Seventh and Beech, n. e. cor.			48		S.	16
458	Goodhue and Dousman n. e. cor.		40			S.	6
459	Goodhue and Cliff, n. w.		39			S.	6
460	Grace and Colborne, s. w. cor.		36			S.	6
461	Colborne and Jefferson, s. w. cor.		38			S.	6
462	Duke and Seventh, s. w. cor.		35			S.	6
463	Seventh and Minnehaha, n. w. cor.			55		S.	16
464	Seventh and Reaney, n. w. cor.			52		S.	16
465	Seventh and Forest, n. w. cor.			52		S.	16
466	Nash and L'Orient, n. e. cor.		37			S.	6
467	Jessie and Fauquier, s. w. cor.			81		S.	6
468	Seventh and Erie, s. e. cor.		36			S.	16
469	Seventh and Fauquier, n. w. cor.			56		S.	16
470	Seventh and Cypress, n. e. cor.			60		S.	16
471	Seventh and Ross, n. w. cor.			62		S.	16
472	Seventh and Earl, n. w. cor.			64		S.	16
473	Ross and Earl, n. w. cor.			50		S.	6
474	Edmund and Marion, n. e. cor.			58		S.	6
475	Fauquier and Cypress, n. e. cor.			57		S.	6
476	Fauquier and Earl, n. w. cor.			59		S.	6
477	Fauquier and Payne, s. w. cor.		7			S.	12
478	Fauquier and Edgerton, s. s. cor.		16			S.	12
479	Fauquier and Bradley, s. w. cor.		19			S.	12
480	De Soto and Fauquier, s. w. cor.		21			S.	12
481	De Soto and Minnehaha, n. w. cor.		10			S.	12
482	Fifth, 350 feet west of Maria.			73		S.	6
483	Fauquier and Forest, n. w. cor.			65		S.	6
484	Fauquier and Mendota, n. s. cor.			63		S.	6
485	Fauquier and Arcade, n. e. cor.			61		S.	6
486	Lincoln, between Oakland and Dale.			59		S.	6
487	Lincoln and Dale, n. e. cor.			39		S.	6
488	Hoffman and Sixth, s. w. cor.			43		S.	6
489	Mendota and Leaney, n. w. cor.			50		S.	6
490	Ninth and Broadway, n. w. cor.		41			S.	6
491	Onelda and Seventh, s. w. cor.			30		S.	6
492	Franklin and Fifth, n. w. cor.			33		S.	4
493	Van Slyke place and Olive, s. w. cor.		38			S.	4
494	Martin and Arundel, n. e. cor.			48		S.	6
495	Lincoln and St. Albans, n. e. cor.			30		S.	6
496	Lincoln and Grotto, n. e. cor.			33		S.	6
497	Lincoln and Avon, n. e. cor.			37		S.	6
498	Fuller and Arundel, n. e. cor.			46		S.	6
499	Fuller and Mackubin, n. e. cor.			43		S.	6
500	Fuller and Kent, n. e. cor.			40		S.	6
501	Goodhue and A n. n. w. cor.		83			S.	6
502	Goodhue and Western, n. w. cor.		32			S.	6
503	Goodhue and Richmond, n. e. cor.		31			S.	6
504	Portland and St. Albans, n. e. cor.			25		S.	6
505	Aurora and Ken, n. e. cor.			46		S.	6
506	Aurora and Mackubin, n. w. cor.			44		S.	6
507	Aurora and Arundel, n. w. cor.			50		S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street M in.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Rear- voir.	West Side.		
508	Holly and St. Albans, n. e. cor.			34		S.	6
509	Holly and Grotto, n. e. cor.			32		S.	6
510	Holly and Avon, n. e. cor.			30		S.	6
511	Martin and Ravoux, n. e. cor.			60		S.	6
512	Martin and Summit place, n. e. cor.			60		S.	6
513	Central and St. Peter, n. w. cor.			60		S.	4
514	Maria and Eighth, n. w. cor.			66		S.	6
515	Bradley and Seventh, s. e. cor.	39				S.	6
516	Ashland and St. Albans, n. e. cor.			36		S.	6
517	Ashland and Grotto, n. e. cor.			33		S.	6
518	Ashland and Avon, n. e. cor.			34		S.	6
519	Goodrich and Dousman.		39			S.	12
520	Goodrich and Garfield, n. w. cor.		32			S.	12
521	Goodrich and Western, n. e. cor.		32			S.	12
522	Eichenwald and Sixth, n. w. cor.			41		S.	6
523	Eichenwald and Seventh, s. w. cor.			42		S.	6
524	Sinnen and Sixth, n. w. cor.			36		S.	6
525	Hague and St. Albans, n. e. cor.			34		S.	6
526	Hague and Grotto, n. e. cor.			32		S.	6
527	Hague and Avon, n. e. cor.			31		S.	6
528	Hague and Fisk, n. e. cor.			31		S.	6
529	Selby and St. Albans, n. e. cor.			33		S.	6
530	Reaney and Forest, n. e. cor.			51		S.	6
531	Reaney and Cypress, n. w. cor.			56		S.	6
532	Reaney and Earl, n. w. cor.			59		S.	6
533	Irvine Park, north side.		53			S.	4
534	Irvine Park, south side.		43			S.	4
535	Marshall and Victoria, n. e. cor.			34		S.	12
536	Marshall and Fisk, n. e. cor.			38		S.	12
537	Marshall and Avon, n. s. cor.			32		S.	12
538	Marshall and Grotto, n. e. cor.			34		S.	12
539	Earl and Minnehaha, n. w. cor.			62		S.	12
540	Earl and Beech, n. w. cor.			63		S.	12
541	Reaney and Frank, n. w. cor.			56		S.	6
542	Laurel and Dale, n. w. cor.			35		S.	6
543	Laurel and St. Albans, n. e. cor.			35		S.	6
544	Laurel and Grotto, n. e. cor.			30		S.	6
545	Laurel and Avon, n. e. cor.			30		S.	6
546	Garfield and Harrison, s. w. cor.		35			S.	6
547	Banfil and Smith avenue, n. w. cor.		39			S.	4
548	Carroll and Dale, n. e. cor.			26		S.	6
549	Fuller and Marion, n. e. cor.			59		S.	6
550	Fuller and Jay, n. e. cor.			59		S.	6
551	Fuller and Farrington, n. e. cor.			58		S.	6
552	Fuller and Virginia, n. e. cor.			55		S.	6
553	Summit place and St. Anthony, n. w. cor.			61		S.	6
554	Cedar and Viola, n. w. cor.			37		S.	6
555	Cedar and Como, s. e. cor.			39		S.	6
556	Viola and Jackson, n. w. cor.			41		S.	6
557	Seventh and Frank, n. w. cor.			62		S.	16
558	Seventh and Frank, n. e. cor.			62		S.	16
559	Seventh and Duluth, n. w. cor.			60		S.	16
560	Rice and Lafond, s. w. cor.			55		S.	12
561	Rice and Arch.			56		S.	12
562	Rice and Pennsylvania.			57		S.	12
563	Rondo and Ravoux, n. w. cor.			63		S.	6
564	Rondo and Summit place, n. w. cor.			62		S.	6
565	Williams and Olive, n. w. cor.			79		S.	6
566	Olive and Pennsylvania, s. w. cor.			58		S.	6
567	Rondo and Louis, n. w. cor.			60		S.	6
568	Rondo and Farrington, n. e. cor.			58		S.	6
569	Ninth and Smith avenue, n. e. cor.		23			S.	6
570	Franklin and Sixth, n. w. cor.		33			S.	4
571	Rondo and Virginia, n. e. cor.			57		S.	6
572	Mendota and Beech, n. w. cor.			54		S.	12



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LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
573	Kittson and Fourth, n. w. cor.....	65				S.	6
574	Valley and Warren, n. e. cor.....			51		S.	10
575	Fairview and Valley, n. w. cor.....			50		S.	6
576	Mendota and Dawson, n. w. cor.....			44		S.	12
577	Mendota and Francis, n. w. cor.....			40		S.	12
578	Mendota and Fourth, n. w. cor.....			48		S.	12
579	Mt. Airy and Broadway, n. w. cor.....			50		S.	6
580	Fourth and Neill, n. e. cor.....		67			S.	12
581	Fourth and Willis, n. e. cor.....		66			S.	12
582	Fourth and Locust, n. e. cor.....		66			S.	12
583	Mendota and Fremont, n. w. cor.....			50		S.	12
584	Mendota and Conway, n. w. cor.....			53		S.	12
585	Euclid and Forest, n. e. cor.....			57		S.	6
586	Euclid and Mendota, n. e. cor.....			55		S.	6
587	Third and Cypress, n. w. cor.....			47		S.	6
588	Third and Forest, n. e. cor.....			50		S.	6
589	Third and Mendota, n. e. cor.....			52		S.	6
590	Third and Arcade, n. e. cor.....			44		S.	6
591	Hudson and Mendota, n. w. cor.....			49		S.	12
592	Mt. Airy and Linden, n. w. cor.....			40		S.	6
593	Mt. Airy and Warren, n. e. cor.....			38		S.	6
594	Maple and Euclid, n. w. cor.....			48		S.	6
595	Mt. Airy and Fairview, n. e. cor.....			55		S.	6
596	Webster and Palace, s. w. cor.....		34			S.	6
597	Maple and Ravine, s. w. cor.....			50		S.	6
598	Fourth and Broadway, n. e. cor.....		01			S.	12
599	Maple and Conway, n. w. cor.....			40		S.	6
600	Viola and Brewster, n. w. cor.....			38		S.	6
601	Maple and Fourth, n. w. cor.....			41		S.	6
602	Viola and Park, n. w. cor.....			56		S.	6
603	Maple and Sixth, n. w. cor.....			50		S.	6
604	Margaret and Arcade, n. w. cor.....			41		S.	6
605	Margaret and Mendota, n. w. cor.....			52		S.	6
606	Sherburne and Marion, n. e. cor.....			54		S.	6
607	Granite and Courtland, n. e. cor.....			60		S.	6
608	Granite and Agate, n. e. cor.....			63		S.	6
609	Granite and Beaver, n. e. cor.....			74		S.	6
610	Margaret and Forest, n. w. cor.....			49		S.	6
611	Sherburne and Gaultier, n. w. cor.....			58		S.	6
612	Sherburne and Farrington, n. e. cor.....			57		S.	6
613	Sherburne and Virginia, n. w. cor.....			57		S.	6
614	Margaret and Cypress, n. w. cor.....			46		S.	6
615	Margaret and Earl, n. w. cor.....			02		S.	6
616	Mississippi and Case, s. w. cor.....		30			S.	6
617	Mississippi and Jenks, n. w. cor.....		28			S.	6
618	Mississippi and Lawson, s. w. cor.....		27			S.	6
619	Mississippi and Cook, s. w. cor.....		24			S.	6
620	Mississippi and Magnolia, s. w. cor.....		20			S.	6
621	Mississippi and Jessamine, s. w. cor.....		20			S.	6
622	Robert and Thirteenth, s. e. cor.....		29			S.	6
623	Capitol and Buffalo, n. s. cor.....			64		S.	6
624	Capitol and Elk, n. e. cor.....			67		S.	6
625	Capitol and Cortland, n. e. cor.....			68		S.	6
626	University and Mackubin, n. e. cor.....			51		S.	12
627	University and Kent, n. e. cor.....			48		S.	12
628	University and Dale, n. e. cor.....			45		S.	12
629	Central avenue, north of Central Park.....			73		S.	6
630	Central Drive E, and Summit av., n. e. cor.....			84		S.	4
631	Genesee and Buffalo, n. e. cor.....			65		S.	6
632	Sherburne and Western, n. w. cor.....			58		S.	6
633	Sherburne and Arundel, n. w. cor.....			57		S.	6
634	Sherburne and Mackubin, n. w. cor.....			53		S.	6
635	Sherburne and Kent, n. w. cor.....			49		S.	6
636	Aurora and Virginia, n. w. cor.....			58		S.	6
637	Fourteenth and Robert, n. e. cor.....		30			S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
638	Payne and Minnehaha, n. w. cor.....	.....	.....	81	.....	S.	6
639	Reaney and Payne, n. w. cor.....	.....	.....	76	.....	S.	6
640	Reaney and Edgerton, n. e. cor.....	.....	.....	74	.....	S.	6
641	Eagle and Spring, n. e. cor.....	.....	68	.....	.....	S.	6
642	Charles and Marion, n. e. cor.....	.....	.....	58	.....	S.	6
643	Charles and Gaultier, n. w. cor.....	.....	.....	57	.....	S.	6
644	Charles and Elfelt, n. w. cor.....	.....	.....	56	.....	S.	6
645	Charles and Farrington, n. e. cor.....	.....	.....	56	.....	S.	6
646	Charles and Virginia, n. e. cor.....	.....	.....	56	.....	S.	6
647	Charles and Western, n. e. cor.....	.....	.....	57	.....	S.	6
648	Virginia and Marshall, n. w. cor.....	.....	.....	31	.....	S.	4
649	Decatur and Bedford, n. e. cor.....	.....	.....	88	.....	S.	6
650	Decatur and Edgerton, n. w. cor.....	.....	.....	80	.....	S.	6
651	Beaumont and Preble, n. w. cor.....	.....	.....	86	.....	S.	6
652	Oakland and Lincoln, s. w. cor.....	.....	.....	47	.....	S.	6
653	Oakland and Floral.....	.....	.....	54	.....	S.	6
654	Oakland and Lawton, n. w. cor.....	.....	.....	65	.....	S.	6
655	Oakland and Western, n. w. cor.....	.....	.....	81	.....	S.	6
656	Wabasha and Leves.....	.....	64	.....	.....	S.	6
657	Wabasha and Fillmore, s. w. cor.....	.....	67	.....	.....	S.	6
658	Wabasha and Fairfield, s. w. cor.....	.....	68	.....	.....	S.	6
659	Wabasha and Indiana, s. w. cor.....	.....	69	.....	.....	S.	6
660	Wabasha and Chicago, s. w. cor.....	.....	68	.....	.....	S.	6
661	Wabasha and Channel, n. w. cor.....	.....	67	.....	.....	S.	6
662	Toronto and Seventh, s. w. cor.....	.....	34	.....	.....	S.	6
663	James and Seventh, n. e. cor.....	.....	34	.....	.....	S.	6
664	Randolph and Seventh, n. e. cor.....	.....	33	.....	.....	S.	6
665	Warsaw and Seventh, s. w. cor.....	.....	32	.....	.....	S.	6
666	Audubon and Seventh, n. e. cor.....	.....	32	.....	.....	S.	6
667	Summit and St. Albans, n. e. cor.....	.....	.....	36	.....	S.	12
668	Carroll and Victoria, n. w. cor.....	.....	.....	45	.....	S.	6
669	Carroll and Milton, n. w. cor.....	.....	.....	39	.....	S.	6
670	Western and St. Clair, n. w. cor.....	.....	37	.....	.....	S.	6
671	Armstrong and Seventh, n. e. cor.....	.....	33	.....	.....	S.	6
672	Bay and Seventh, s. w. cor.....	.....	32	.....	.....	S.	6
673	Lee and Summit, n. e. cor.....	.....	33	.....	.....	S.	6
674	Jefferson and Onelda, n. e. cor.....	.....	35	.....	.....	S.	12
675	Jefferson and Webster, n. e. cor.....	.....	34	.....	.....	S.	12
676	Webster, 300 feet north of Jefferson.....	.....	30	.....	.....	S.	6
677	Maria and Plum, n. w. cor.....	.....	.....	73	.....	S.	6
678	Maria and Cherry, n. w. cor.....	.....	.....	72	.....	S.	6
679	Robert, 200 feet north of University.....	.....	.....	67	.....	S.	6
680	Grotto and Summit, n. w. cor.....	.....	.....	32	.....	S.	6
681	Grotto and Portland, n. w. cor.....	.....	.....	31	.....	S.	6
682	Hoffman and Cherry, s. w. cor.....	.....	.....	77	.....	S.	6
683	Minnesota and Seventh, s. e. cor.....	.....	44	.....	.....	S.	6
684	Dayton and Victoria, n. w. cor.....	.....	.....	32	.....	S.	6
685	Minnesota and Fourth, s. e. cor.....	.....	45	.....	.....	S.	6
686	Selby and Grotto, n. w. cor.....	.....	.....	33	.....	S.	6
687	Selby and Avon, n. e. cor.....	.....	.....	31	.....	S.	6
688	Selby and Fisk, n. e. cor.....	.....	.....	32	.....	S.	6
689	Selby and Victoria, n. e. cor.....	.....	.....	31	.....	S.	6
690	Hoffman and McLean.....	.....	.....	76	.....	S.	6
691	Hoffman and Lizzie.....	.....	.....	74	.....	S.	6
692	Hoffman and River.....	.....	.....	73	.....	S.	6
693	Portland and Avon, n. e. cor.....	.....	.....	29	.....	S.	6
694	Margaret and Hope, n. w. cor.....	.....	.....	43	.....	S.	6
695	Margaret and Greenbrier, n. e. cor.....	.....	.....	46	.....	S.	6
696	Hoffman and Clermont.....	.....	.....	72	.....	S.	6
697	Cherry, 200 feet south of Hoffman.....	.....	.....	89	.....	S.	4
698	Ramsey and Western, n. e. cor.....	.....	.....	55	.....	S.	6
699	Oakland and Ramsey, n. w. cor.....	.....	.....	86	.....	S.	6
700	Fourth and Hope, n. w. cor.....	.....	.....	44	.....	S.	6
701	Western and Milwaukee Short Line.....	.....	41	.....	.....	S.	6
702	Goodrich, 750 feet east of Dale.....	.....	.....	37	.....	S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadnais Lake.	Reser-voir.	West Side.		
703	Dale and Goodrich, n. w. cor.....			37		S.	12
704	Goodrich and Richmond.....		33			S.	6
705	Ninth and Olive, s. w. cor.....	42				S.	6
706	Ninth and Neill, s. w. cor.....	40				S.	4
707	Sixth and Hope, n. e. cor.....			40		S.	6
708	Martin and Kent, n. e. cor.....			44		S.	6
709	Jackson and Valley, s. e. cor.....			48		S.	6
710	Martin and Mackubin, n. e. cor.....			40		S.	6
711	Greenbrier and North, n. w. cor.....			53		S.	12
712	Greenbrier and Maury, s. w. cor.....			49		S.	12
713	Sherburne and Park, n. w. cor.....			51		S.	6
714	Third and Jackson, n. w. cor.....		53			D.	6
715	St. Anthony and Dale, n. e. cor.....			30		S.	6
716	St. Anthony and Kent, n. e. cor.....			39		S.	6
717	Arcade and Minnehaha, s. w. cor.....			53		S.	12
718	St. Anthony and Mackubin, n. e. cor.....			44		S.	6
719	St. Anthony and Arundel, n. e. cor.....			46		S.	6
720	St. Anthony and Virginia, n. w. cor.....			53		S.	6
721	St. Anthony and Farrington, n. w. cor.....			57		S.	6
722	Wabasha and Park, s. e. cor.....			59		S.	4
723	St. Anthony and Jay, n. w. cor.....			61		S.	6
724	St. Anthony and Louis, n. w. cor.....			60		S.	6
725	St. Anthony and Ravoux.....			61		S.	6
726	Sherburne and Brewster, n. w. cor.....			42		S.	6
727	Brewster and University, n. w. cor.....			45		S.	6
728	Harrison and Western, n. e. cor.....		33			S.	6
729	Martin and Virginia, n. w. cor.....			54		S.	6
730	Martin and Farrington, n. w. cor.....			57		S.	6
731	Pennsylvania and L'Orient, n. e. cor.....		33			S.	6
732	Martin and Jay, n. w. cor.....			59		S.	6
733	Martin and Louis, n. e. cor.....			59		S.	6
734	Glencoe and L'Orient, n. e. cor.....		31			S.	6
735	Glencoe and Columbia, n. e. cor.....		27			S.	6
736	Arcade and Wells, n. w. cor.....			56		S.	12
737	Arcade and York, n. w. cor.....			50		S.	12
738	Arcade and Sims, n. w. cor.....			46		S.	12
739	Arcade and Case, n. w. cor.....			48		S.	12
740	Arcade and Jinks, s. w. cor.....			49		S.	12
741	Arcade and Lawson, s. w. cor.....			45		S.	12
742	Arcade and Cook, s. w. cor.....			42		S.	12
743	Arcade and Magnolia, s. w. cor.....			43		S.	12
744	Arcade, in front of Bohn Mfg. Co.....			60		D.	12
745	Fauquier and Welde, n. e. cor.....			58		S.	6
746	Reaney and Welde, n. e. cor.....			62		S.	6
747	Reaney and Arcade, n. e. cor.....			56		S.	6
748	Edmund and Gaultier, n. e. cor.....			57		S.	6
749	Edmund and Elfeldt, n. e. cor.....			50		S.	6
750	Edmund and Farrington, n. e. cor.....			55		S.	6
751	Edmund and Virginia, n. e. cor.....			55		S.	6
752	Edmund and Western, n. e. cor.....			50		S.	6
753	Como and Thomas, s. e. cor.....			56		S.	20
754	Como and Claghorn, s. e. cor.....			58		S.	20
755	Como and Lafond, s. e. cor.....			50		S.	20
756	Como and Gaultier, s. e. cor.....			61		S.	20
757	Aurora and Marlon, n. e. cor.....			59		S.	6
758	Aurora and Jay, n. e. cor.....			57		S.	6
759	Aurora and Farrington, n. e. cor.....			59		S.	6
760	Preble and Minnehaha, s. w. cor.....			80		S.	6
761	Payne and Beaumont.....			85		S.	6
762	Thomas and Arundel, n. e. cor.....			58		S.	6
763	Thomas and Mackubin, n. e. cor.....			57		S.	6
764	Conway and Arcade, n. e. cor.....			49		S.	6
765	Conway and Forest, n. e. cor.....			51		S.	6
766	Thomas and Kent, n. e. cor.....			52		S.	6
767	Thomas and Dale, n. e. cor.....			47		S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Valina's Lake.	Reser- voir.	West Side.		
768	Frances and Arcade, n. e. cor.			45		2.	6
769	River and Maria, s. w. cor.			68		2.	6
770	Duke and Jefferson, s. w. cor.		37			2.	6
771	Duke and Cascade, n. w. cor.		44			2.	6
772	Blair and Arundel, n. e. cor.			50		2.	6
773	Blair and Mackubin, n. e. cor.			57		2.	6
774	Blair and Kent, n. e. cor.			55		2.	6
775	Blair and Dale, n. e. cor.			52		2.	6
776	Iglehart and Dale, n. e. cor.			30		2.	6
777	Fairfield and Starkey, n. e. cor.		69			2.	6
778	Fairfield and Custer, n. e. cor.		68			2.	6
779	Jackson and Winter			53		2.	12
780	Jackson and Arch, s. e. cor.			56		2.	12
781	Jackson and Pennsylvania, s. e. cor.			60		2.	12
782	Fairfield and Hubert, n. e. cor.		67			2.	6
783	Fairfield and Robert, n. e. cor.		65			2.	6
784	Fairfield and Eaton, n. e. cor.		66			2.	6
785	Fairfield and Eva, n. e. cor.		67			2.	6
786	Fairfield and Robertson, n. w. cor.		68			2.	6
787	Fairfield and State, n. w. cor.		69			2.	6
788	Como and Elfelt, s. e. cor.			60		2.	20
789	Como and Van Buren, s. w. cor.			61		2.	20
790	Como and Minnehaha, s. w. cor.			59		2.	20
791	Como and Virginia, s. w. cor.			54		2.	20
792	Como and Western, s. e. cor.			51		2.	20
793	Indiana, between Wabasha and Starkey		69			2.	12
794	Front and Dale, n. e. cor.			41		2.	12
795	Front and Kent, n. w. cor.			51		2.	12
796	Front and Mackubin, n. w. cor.			58		2.	12
797	Front and Arundel, n. w. cor.			53		2.	12
798	Front and Western, n. w. cor.			45		2.	12
799	Randolph and Bay, n. e. cor.		31			2.	12
800	Randolph and View, n. e. cor.		30			2.	12
801	Front and Hand, n. w. cor.			42		2.	12
802	Front and Farrington, n. w. cor.			44		2.	12
803	Front and Matilda, n. w. cor.			47		2.	12
804	Front and Gaultier, n. w. cor.			52		2.	12
805	Fillmore and State, n. w. cor.		69			2.	6
806	Front and Marion, n. w. cor.			59		2.	12
807	Front and Woodbridge, n. w. cor.			60		2.	12
808	Front and Albemarle, n. w. cor.			60		2.	12
809	Front and Rice, n. w. cor.			60		2.	12
810	Lincoln and Victoria, n. e. cor.			31		2.	6
811	Lincoln and Milton, n. w. cor.			34		2.	6
812	Grand and Milton, n. w. cor.			33		2.	6
813	Hague and Victoria, n. e. cor.			32		2.	6
814	Douman and Yankee, n. w. cor.		38			2.	6
815	Indiana and State, n. w. cor.		69			2.	16
816	Indiana and Robertson, n. w. cor.		68			2.	16
817	Indiana and Eva, n. w. cor.		68			2.	16
818	Eaton and Indiana, s. w. cor.		68			2.	16
819	Indiana and Robert, n. e. cor.		68			2.	16
820	Indiana and Hubert, n. e. cor.		68			2.	16
821	Indiana and Custer, n. e. cor.		68			2.	16
822	Indiana and Starkey, n. e. cor.		69			2.	16
823	Milwaukee freight yards.		69			2.	16
824	Summit and Minnesota, s. w. cor.		27			2.	6
825	Wabasha and Wood		64			2.	6
826	Wabasha and Colorado, n. w. cor.		57			2.	6
827	Wabasha and Delos, s. w. cor.		53			2.	6
828	Isabel and State, n. w. cor.		53			2.	12
829	Isabel and Greenwood, n. w. cor.		49			2.	12
830	Isabel and Clinton, n. w. cor.		52			2.	12
831	Isabel and Robert, n. w. cor.		53			2.	12
832	Isabel and Livingston, n. w. cor.		54			2.	12



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
833	Isabel and Starkey, n. w. cor.....	.....	54	.....	.....	g.	12
834	Isabel and Wabasha, n. w. cor.....	.....	49	.....	.....	g.	12
835	Isabel and Goff, n. w. cor.....	.....	40	.....	.....	g.	12
836	Isabel and Hall, n. w. cor.....	.....	22	.....	.....	g.	12
837	Isabel and Stryker, n. w. cor.....	.....	20	.....	.....	g.	12
838	Isabel and Winslow, n. w. cor.....	.....	21	.....	.....	g.	12
839	Concord and Bancroft, n. w. cor.....	.....	54	.....	.....	g.	12
840	Concord and Anita, n. e. cor.....	.....	53	.....	.....	g.	12
841	Concord and Ada, n. e. cor.....	.....	50	.....	.....	g.	12
842	Concord and State, n. e. cor.....	.....	49	.....	.....	g.	12
843	Concord and Robie, s. w. cor.....	.....	50	.....	.....	g.	12
844	Concord and Winifred, s. w. cor.....	.....	53	.....	.....	g.	12
845	Concord and Congress, s. w. cor.....	.....	54	.....	.....	g.	12
846	Concord and Onega, s. w. cor.....	.....	56	.....	.....	g.	12
847	John and Williams, s. w. cor.....	32	.....	.....	.....	g.	6
848	Western and Superior, s. w. cor.....	.....	32	.....	.....	g.	6
849	Robert and Fillmore, n. w. cor.....	.....	61	.....	.....	g.	6
850	Congress and Robert, n. w. cor.....	.....	54	.....	.....	g.	6
851	Congress and Clinton, n. w. cor.....	.....	52	.....	.....	g.	6
852	Congress and Greenwood, n. w. cor.....	.....	50	.....	.....	g.	6
853	Congress and State, n. w. cor.....	.....	50	.....	.....	g.	6
854	Minnehaha and Edgerton, n. w. cor.....	.....	.....	79	.....	g.	6
855	Robie and State, n. e. cor.....	.....	52	.....	.....	g.	6
856	Robie and Ada, n. e. cor.....	.....	53	.....	.....	g.	6
857	Robie and Anita, n. e. cor.....	.....	56	.....	.....	g.	6
858	Robie and Bancroft, n. w. cor.....	.....	58	.....	.....	g.	6
859	Winifred and State, n. e. cor.....	.....	51	.....	.....	g.	6
860	Winifred and Ada, n. e. cor.....	.....	52	.....	.....	g.	6
861	Winifred and Anita, n. e. cor.....	.....	51	.....	.....	g.	6
862	Winifred and Bancroft, n. w. cor.....	.....	52	.....	.....	g.	6
863	Congress and State, n. e. cor.....	.....	50	.....	.....	g.	6
864	Congress and Ada, n. e. cor.....	.....	50	.....	.....	g.	6
865	Congress and Anita.....	.....	50	.....	.....	g.	6
866	Congress and Dunedin Terrace, n. e. cor.....	.....	50	.....	.....	g.	6
867	Congress and Bancroft.....	.....	50	.....	.....	g.	6
868	Hoffman and Short, s. w. cor.....	.....	.....	76	.....	g.	6
869	Sixth and Washington, s. e. cor.....	.....	33	.....	.....	g.	6
870	Lee and Drake, n. w. cor.....	.....	43	.....	.....	g.	6
871	Lee and Warsaw, n. w. cor.....	.....	39	.....	.....	g.	6
872	Lee and Bay, n. e. cor.....	.....	35	.....	.....	g.	6
873	Western and Banfil, n. w. cor.....	.....	31	.....	.....	g.	6
874	Von Minden and Dousman, n. w. cor.....	.....	35	.....	.....	g.	6
875	Von Minden and Ann, n. w. cor.....	.....	34	.....	.....	g.	6
876	Minnehaha and Bradley, n. e. cor.....	.....	.....	77	.....	g.	6
877	Fillmore and Starkey, n. w. cor.....	.....	68	.....	.....	g.	6
878	Brewster and Como, s. w. cor.....	.....	.....	41	.....	g.	6
879	Mt. Airy and L'Orient, n. w. cor.....	.....	.....	80	.....	g.	6
880	Sherburne and Dale, n. e. cor.....	.....	.....	46	.....	g.	6
881	Fillmore and Custer, n. w. cor.....	.....	66	.....	.....	g.	6
882	Fillmore and Hubert, n. w. cor.....	.....	63	.....	.....	g.	6
883	Fillmore and Eaton, n. e. cor.....	.....	62	.....	.....	g.	6
884	Fillmore and Eva, n. w. cor.....	.....	65	.....	.....	g.	6
885	Fillmore and Robertson, n. w. cor.....	.....	67	.....	.....	g.	6
886	Woodward and Burr, n. e. cor.....	41	.....	.....	.....	g.	4
887	Wabasha and Congress, n. w. cor.....	.....	46	.....	.....	g.	6
888	Wabasha and Goff.....	.....	41	.....	.....	g.	6
889	Congress and Onega, n. w. cor.....	.....	49	.....	.....	g.	6
890	Reaney and Walsh, n. e. cor.....	.....	.....	70	.....	g.	6
891	Reaney and Greenbrier, n. e. cor.....	.....	.....	72	.....	g.	6
892	Euclid and Cypress, n. e. cor.....	.....	.....	48	.....	g.	6
893	Euclid and Earl, n. w. cor.....	.....	.....	43	.....	g.	6
894	Livingston and Wood, s. w. cor.....	.....	57	.....	.....	g.	6
895	Colorado and Parnell, n. e. cor.....	.....	53	.....	.....	g.	6
896	Colorado and Livingston, n. e. cor.....	.....	53	.....	.....	g.	6
897	Colorado and South Robert, n. e. cor.....	.....	54	.....	.....	g.	6
898	Colorado and Clinton, n. e. cor.....	.....	55	.....	.....	g.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Riser- votr.	West Side.		
899	South Robert and Wood, s. w. cor.		57			S.	6
900	Carroll and St. Albans, n. e. cor.			36		S.	6
901	Carroll and Grotto, n. e. cor.			35		S.	6
902	Carroll and Avon, n. e. cor.			38		S.	6
903	Carroll and Flsk, n. e. cor.			43		S.	6
904	Concord and Brown, n. w. cor.		57			S.	12
905	Concord and Andrew, n. w. cor.		60			S.	12
906	Iglehart and St. Albans, n. e. cor.			36		S.	6
907	Iglehart and Grotto, n. e. cor.			33		S.	6
908	Iglehart and Avon, n. e. cor.			36		S.	6
909	Iglehart and Flsk, n. e. cor.			40		S.	6
910	Iglehart and Victoria, n. e. cor.			39		S.	6
911	Winifred and Clinton, n. w. cor.		52			S.	6
912	Winifred and Greenwood, n. w. cor.		51			S.	6
913	Lafayette and Woodward, n. w. cor.		39			S.	16
914	Isabel and Hidwell, n. w. cor.		22			S.	12
915	Isabel and Bellows, n. w. cor.		21			S.	12
916	Summit and Avon, n. e. cor.			30		S.	12
917	Summit and Victoria, n. e. cor.			31		S.	12
918	Winifred and Brown, n. w. cor.		50			S.	6
919	Winifred and Andrew, n. w. cor.		58			S.	6
920	Ross and Frank, n. w. cor.			61		S.	6
921	Ross and Duluth, n. w. cor.			59		S.	6
922	Ross and Atlantic, n. w. cor.			55		S.	6
923	Summit and Milton, n. e. cor.			34		S.	12
924	Summit and Chatsworth, n. e. cor.			33		S.	12
925	Delos and Greenwood, n. w. cor.		49			S.	6
926	Delos and Clinton, n. e. cor.		51			S.	6
927	Delos and South Robert, n. e. cor.		52			S.	6
928	Western and Sturgis.		34			S.	6
929	Summit and Oxford, n. e. cor.			32		S.	12
930	Summit and Lexington, n. e. cor.			33		S.	12
931	Beech and Frank, n. w. cor.			50		S.	6
932	Beech and Duluth, n. w. cor.			51		S.	6
933	Delos and Starkey, n. e. cor.		57			S.	6
934	Delos and Livingston, n. e. cor.		54			S.	6
935	Jackson and Fifth, n. e. cor.		47			D.	12
936	Jackson and Sixth, s. e. cor.		46			D.	12
937	Jackson and Seventh, s. e. cor.		45			D.	12
938	Jackson and Eighth, s. e. cor.	41				D.	12
939	Jackson and Ninth, s. e. cor.	36				D.	12
940	Summit and Dunlap.			29		S.	12
941	Summit and Origgs.			29		S.	12
942	Summit and Milwaukee railway.			29		S.	12
943	Beech and Forest, n. w. cor.			52		S.	6
944	South Robert and Chicago, n. w. cor.		60			S.	6
945	South Robert and Plato, n. w. cor.		70			S.	6
946	South Robert, 250 feet south of Plato.		70			S.	6
947	South Robert and Morrison.		64			S.	6
948	South Robert and Railroad bridge.		59			S.	6
949	Marion and Thomas, s. w. cor.			58		S.	6
950	Marion and Lafond, s. w. cor.			59		S.	6
951	State and Chicago, n. w. cor.		60			S.	16
952	State and Plato, n. w. cor.		69			S.	16
953	State and Florida, n. w. cor.		69			S.	16
954	State and Utah.		68			S.	16
955	Van Buren and Western, n. w. cor.			58		S.	6
956	Van Buren and Arundel, n. e. cor.			57		S.	6
957	Isabel and Charlton, n. e. cor.		29			S.	6
958	West Seventh and Ramsey, n. e. cor.		36			D.	20
959	West Seventh and Walnut, n. e. cor.		41			D.	20
960	West Seventh and Chestnut, s. e. cor.		38			D.	20
961	Lafond and Western, n. w. cor.			56		S.	6
962	Lafond and Arundel, n. w. cor.			57		S.	6
963	Lafond and Mackubin, n. e. cor.			57		S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Thalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
964	Randolph and Fulton, n. e. cor.....	.....	29	.....	.....	g.	12
965	Randolph and Clifton, n. e. cor.....	.....	28	.....	.....	g.	12
966	Randolph and Victoria, n. w. cor.....	.....	27	.....	.....	g.	12
967	Randolph and Milton, n. e. cor.....	.....	26	.....	.....	g.	12
968	Lafond and Kent, n. e. cor.....	.....	.....	53	.....	g.	6
969	Lafond and Dale, n. e. cor.....	.....	.....	50	.....	g.	6
970	Eagle and West Seventh, s. w. cor.....	.....	34	.....	.....	g.	6
971	Edmund and Arundel, n. w. cor.....	.....	.....	58	.....	g.	6
972	Edmund and Mackubin, n. e. cor.....	.....	.....	56	.....	g.	6
973	Edmund and Kent, n. e. cor.....	.....	.....	51	.....	g.	6
974	Edmund and Dale, n. e. cor.....	.....	.....	50	.....	g.	6
975	Case and Forest, n. w. cor.....	.....	.....	49	.....	g.	12
976	Case and Menota, n. w. cor.....	.....	.....	49	.....	g.	12
977	Colborne and St. Clair, n. w. cor.....	.....	33	.....	.....	g.	6
978	Case and Weide, n. w. cor.....	.....	.....	36	.....	g.	12
979	Case and Walsh, n. w. cor.....	.....	.....	38	.....	g.	12
980	Aurora and Dale, n. w. cor.....	.....	.....	43	.....	g.	6
981	Fuller and Dale, n. w. cor.....	.....	.....	42	.....	g.	6
982	Rondo and Dale, n. e. cor.....	.....	.....	29	.....	g.	6
983	Payne and Case, n. w. cor.....	.....	.....	66	.....	g.	6
984	Payne and Jenks, n. w. cor.....	.....	.....	65	.....	g.	6
985	Payne and Lawton, n. w. cor.....	.....	.....	64	.....	g.	6
986	Cook and Payne, n. e. cor.....	.....	.....	61	.....	g.	6
987	Case and Greenbrier, n. w. cor.....	.....	.....	50	.....	g.	12
988	Case and Edgerton, n. e. cor.....	.....	.....	73	.....	g.	12
989	Martin and Dale, n. e. cor.....	.....	.....	40	.....	g.	6
990	Colborne and Superior, s. w. cor.....	.....	32	.....	.....	g.	6
991	Colborne and Michigan, s. w. cor.....	.....	32	.....	.....	g.	6
992	Case and Jessie, n. e. cor.....	.....	.....	73	.....	g.	12
993	Case and Bradley, n. e. cor.....	.....	.....	67	.....	g.	12
994	Case and Burr, n. e. cor.....	.....	.....	66	.....	g.	12
995	Case and De Soto, n. w. cor.....	.....	.....	66	.....	g.	12
996	Case and Arkwright, n. w. cor.....	.....	.....	60	.....	g.	12
997	Case and McMenemy, n. e. cor.....	.....	.....	62	.....	g.	12
998	Burr and Jenks, s. w. cor.....	.....	.....	66	.....	g.	6
999	Burr and York, n. w. cor.....	.....	.....	63	.....	g.	6
1000	Burr and Whitall, n. w. cor.....	.....	.....	60	.....	g.	6
1001	Burr and Omaha railway, n. w. cor.....	.....	.....	66	.....	g.	6
1002	Charles and Mackubin, n. w. cor.....	.....	.....	55	.....	g.	6
1003	Charles and Kent, n. w. cor.....	.....	.....	50	.....	g.	6
1004	Charles and Dale, n. e. cor.....	.....	.....	48	.....	g.	6
1005	Charles and St. Albans, n. e. cor.....	.....	.....	47	.....	g.	6
1006	Edmund and St. Albans, n. e. cor.....	.....	.....	48	.....	g.	6
1007	Edmund and Grotto, n. e. cor.....	.....	.....	50	.....	g.	6
1008	Lafond and St. Albans, n. e. cor.....	.....	.....	48	.....	g.	6
1009	Lafond and Grotto, n. e. cor.....	.....	.....	51	.....	g.	6
1010	Van Buren and Dale, n. w. cor.....	.....	.....	54	.....	g.	6
1011	Minnehaha and Dale, n. w. cor.....	.....	.....	54	.....	g.	6
1012	Payne and Omaha railway.....	.....	.....	63	.....	g.	6
1013	Payne and Ross, n. w. cor.....	.....	.....	65	.....	g.	6
1014	Payne and Whitall, n. w. cor.....	.....	.....	63	.....	g.	6
1015	Payne and Wells, n. w. cor.....	.....	.....	61	.....	g.	6
1016	York and Edgerton, n. e. cor.....	.....	.....	75	.....	g.	6
1017	York and Payne, n. w. cor.....	.....	.....	62	.....	g.	6
1018	York and Greenbrier, n. w. cor.....	.....	.....	48	.....	g.	6
1019	Sims and Greenbrier, n. w. cor.....	.....	.....	49	.....	g.	6
1020	Sims and Payne, n. e. cor.....	.....	.....	64	.....	g.	6
1021	Tuscarora and West Seventh, n. e. cor.....	.....	33	.....	.....	g.	6
1022	Sims and Weide, n. w. cor.....	.....	.....	35	.....	g.	6
1023	Sims and Walsh, n. w. cor.....	.....	.....	41	.....	g.	6
1024	York and Weide, n. w. cor.....	.....	.....	33	.....	g.	6
1025	York and Walsh, n. w. cor.....	.....	.....	40	.....	g.	6
1026	University and St. Albans, n. e. cor.....	.....	.....	48	.....	g.	20
1027	University and Grotto, n. e. cor.....	.....	.....	47	.....	g.	20
1028	University and Avon, n. e. cor.....	.....	.....	47	.....	g.	20

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadnais Lake.	Reser- voir.	West Side.		
1029	University and Victoria, n. e. cor.	.....	.....	46	.....	g.	20
1030	York and Mendota, n. w. cor.	.....	.....	53	.....	g.	6
1031	York and Forest, n. w. cor.	.....	.....	57	.....	g.	6
1032	Forest and Wells, n. w. cor.	.....	.....	64	.....	g.	6
1033	Forest and Sims, n. w. cor.	.....	.....	51	.....	g.	6
1034	Beech and Cypress, n. w. cor.	.....	.....	56	.....	g.	6
1035	University and Milton, n. e. cor.	.....	.....	47	.....	g.	20
1036	University and Chatsworth, n. e. cor.	.....	.....	57	.....	g.	20
1037	University and Oxford, n. e. cor.	.....	.....	50	.....	g.	20
1038	University and Lexington, n. e. cor.	.....	.....	45	.....	g.	20
1039	Park avenue and Aurora, n. w. cor.	.....	.....	59	.....	g.	6
1040	Daly and James, n. w. cor.	.....	34	.....	.....	g.	6
1041	Daly and Palace, s. w. cor.	.....	32	.....	.....	g.	6
1042	Daly and Jefferson, s. w. cor.	.....	32	.....	.....	g.	6
1043	Third and Pine	.....	68	.....	D.	D.	12
1044	Third and Olive	.....	69	.....	D.	D.	12
1045	Third and John	.....	69	.....	D.	D.	12
1046	Laurel and Fisk, n. w. cor.	.....	.....	31	.....	g.	6
1047	Summit court	.....	.....	34	.....	g.	6
1048	Third and Broadway, n. w. cor.	.....	67	.....	D.	D.	12
1049	Third and Wacouta, n. e. cor.	.....	64	.....	D.	D.	12
1050	Sibley and Third, n. e. cor.	.....	62	.....	D.	D.	12
1051	Goodrich and St. Albans, n. e. cor.	.....	.....	40	.....	g.	6
1052	Goodrich and Grotto, n. e. cor.	.....	.....	35	.....	g.	6
1053	Goodrich and Avon, n. e. cor.	.....	.....	33	.....	g.	6
1054	Goodrich and Victoria, n. e. cor.	.....	.....	32	.....	g.	6
1055	State and Morrison, s. w. cor.	.....	67	.....	g.	g.	16
1056	State and Champlain, s. w. cor.	.....	67	.....	g.	g.	16
1057	State and Eaton, s. w. cor.	.....	63	.....	g.	g.	16
1058	State and Delos, s. w. cor.	.....	57	.....	g.	g.	16
1059	Mound and Hastings, s. w. cor.	.....	.....	62	.....	g.	12
1060	Mound, 300 feet south of Hastings	.....	.....	56	.....	g.	12
1061	Mound and McLean, s. w. cor.	.....	.....	49	.....	g.	12
1062	Mound and Lizzie, n. w. cor.	.....	.....	45	.....	g.	12
1063	Garfield and Lisbon, n. w. cor.	.....	34	.....	.....	g.	6
1064	Fairmount and Dale, n. w. cor.	.....	.....	37	.....	g.	12
1065	Kenwood Park, north side	.....	.....	31	.....	g.	6
1066	Kenwood Park, south side	.....	.....	30	.....	g.	6
1067	Pine and Pennsylvania, s. w. cor.	.....	.....	34	.....	g.	6
1068	Fairmount and St. Albans, n. w. cor.	.....	.....	45	.....	g.	6
1069	Fairmount and Grotto, n. e. cor.	.....	.....	37	.....	g.	6
1070	Seventh and Wabasha, n. e. cor.	.....	36	.....	D.	D.	16
1071	Seventh and Cedar, n. e. cor.	.....	42	.....	D.	D.	16
1072	Seventh and Minnesota, n. e. cor.	.....	44	.....	D.	D.	16
1073	Seventh and Robert, n. e. cor.	.....	45	.....	D.	D.	16
1074	University and Griggs, n. e. cor.	.....	.....	36	.....	g.	20
1075	University and Hamline, n. e. cor.	.....	.....	30	.....	g.	20
1076	University and Pascal, n. e. cor.	.....	.....	32	.....	g.	20
1077	University and Snell, n. e. cor.	.....	.....	33	.....	g.	20
1078	University and Aldine, n. e. cor.	.....	.....	36	.....	g.	20
1079	University and Wheeler, n. e. cor.	.....	.....	39	.....	g.	20
1080	Fairview and University, n. w. cor.	.....	.....	41	.....	g.	20
1081	University and Prior, n. e. cor.	.....	.....	40	.....	g.	20
1082	Laura and University, s. w. cor.	.....	.....	42	.....	g.	6
1083	Laura and Waltham, n. w. cor.	.....	.....	34	.....	g.	6
1084	Feronia and Laura, n. w. cor.	.....	.....	39	.....	g.	6
1085	Feronia and Lynnhurst West, n. e. cor.	.....	.....	39	.....	g.	6
1086	Lynnhurst West and Oakley, s. w. cor.	.....	.....	44	.....	g.	6
1087	Lynnhurst and University, s. w. cor.	.....	.....	41	.....	g.	6
1088	Lynnhurst East, 300 feet north of Feronia	.....	.....	43	.....	g.	6
1089	Oakley and Prior, n. e. cor.	.....	.....	40	.....	g.	6
1090	Feronia and Fairview, n. w. cor.	.....	.....	41	.....	g.	6
1091	Waltham, 300 feet east of Prior	.....	.....	38	.....	g.	4
1092	Milwaukee avenue and Marion place	.....	.....	39	.....	g.	6
1093	Milwaukee avenue and Astoria, n. e. cor.	.....	.....	37	.....	g.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Racer- volr.	West Side.		
1094	St. Anthony and Ferdinand, n. w. cor.....			36		S.	6
1095	St. Anthony and Howell.....			37		S.	6
1096	St. Anthony and Prior, n. w. cor.....			34		S.	6
1097	St. Anthony and Merriam place, n. w. cor.....			35		S.	6
1098	St. Anthony and Astoria, n. e. cor.....			34		S.	6
1099	St. Anthony and Cleveland, n. e. cor.....			34		S.	6
1100	Rondo and Laura, n. e. cor.....			32		S.	6
1101	Rondo and Ferdinand, n. e. cor.....			35		S.	6
1102	Rondo and Howell, n. e. cor.....			34		S.	6
1103	Rondo and Prior, n. e. cor.....			34		S.	6
1104	Rondo and Terrace Park avenue, n. e. cor.....			39		S.	6
1105	Carroll and Fairview, n. e. cor.....			33		S.	6
1106	Carroll and Laura, n. e. cor.....			35		S.	6
1107	Carroll and Ferdinand, n. e. cor.....			36		S.	6
1108	Carroll and Howell, n. e. cor.....			37		S.	6
1109	Carroll and Prior, n. e. cor.....			45		S.	6
1110	Carroll and Moore, n. e. cor.....			40		S.	6
1111	Carroll and Wilder, n. e. cor.....			39		S.	6
1112	Carroll and Cleveland, n. e. cor.....			34		S.	6
1113	Iglehart and Cleveland, n. e. cor.....			44		S.	6
1114	Iglehart and Wilder, n. w. cor.....			43		S.	6
1115	Iglehart and Moore, n. e. cor.....			41		S.	6
1116	Iglehart and Prior, n. e. cor.....			37		S.	6
1117	Iglehart and Howell, n. e. cor.....			36		S.	6
1118	Iglehart and Laura, n. w. cor.....			34		S.	6
1119	Wilder and Carroll, n. w. cor.....			39		S.	6
1120	Wilder and Rondo, s. w. cor.....			37		S.	6
1121	Fauquier and Frank, n. w. cor.....			63		S.	6
1122	Plum and Hoffm n. e. cor.....			76		S.	6
1123	Fremont and Forest, n. w. cor.....			47		S.	6
1124	Prio and University s. e. cor.....			40		S.	12
1125	Prior and Feronia, n. e. cor.....			42		S.	12
1126	Sibley and Fourth, s. w. cor.....		54			D.	6
1127	Prior and Marshall, n. w. cor.....			39		S.	12
1128	Chicago and Starkey, n. w. cor.....		69			S.	6
1129	Chicago and Custer, n. w. cor.....		69			S.	6
1130	Emma and Railroad.....		40			S.	6
1131	Robie and Brown, n. w. cor.....		57			S.	6
1132	Rondo and Kent, n. e. cor.....			35		S.	6
1133	Short and Maria, n. w. cor.....			72		S.	6
1134	Ravine, 325 feet west of Maria.....			63		S.	6
1135	Cedar and Fourt..... e. cor.....			38		D.	12
1136	Wabasha and Fourth, n. e. cor.....			32		D.	6
1137	Third and Exchange, south side.....			35		D.	12
1138	Third and Franklin, south side.....			34		D.	12
1139	Third and Washington south side.....			34		D.	12
1140	Third and Market, south side.....			33		D.	12
1141	Third and St. Peter, south side.....			33		D.	12
1142	Cedar and Third, s. e. cor.....			33		D.	12
1143	Wabasha and Third, s. w. cor.....			34		D.	12
1144	Lafond and Claghorn, n. w. cor.....			29		S.	6
1145	Claghorn and Lake, s. w. cor.....			21		S.	6
1146	Claghorn and Van Buren s. w. cor.....				58	S.	12
1147	George and Livingston, n. w. cor.....				58	S.	6
1148	George and Gorman, n. w. cor.....				60	S.	6
1149	George and Goff, n. w. cor.....			20		S.	12
1150	George and Hall, n. w. cor.....			22		S.	12
1151	George and Stryker, n. e. cor.....			23		S.	12
1152	Stryker and Robie, n. w. cor.....			17		S.	12
1153	Stryker and Winifred, n. w. cor.....			15		S.	12
1154	Stryker and Congress, n. w. cor.....			22		S.	6
1155	Stryker and Delos, s. w. cor.....			26		S.	6
1156	Stryker and Colorado, s. w. cor.....			22		S.	6
1157	Stryker and Prospect Terrace, s. w. cor.....			21		S.	6
1158	Sherburne and St. Albans, n. e. cor.....			46		S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1159	Seventh and John, s. e. cor.	42				D.	16
1160	Seventh and Olive, s. e. cor.	40				D.	16
1161	Seventh and Pine, s. e. cor.	40				D.	16
1162	Seventh and Broadway, n. e. cor.	41				D.	16
1163	Seventh and Rosabel, n. e. cor.		44			D.	16
1164	Seventh and Sibley, n. e. cor.		45			D.	16
1165	Wacouta and Seventh, s. e. cor.		44			D.	12
1166	Locust and Seventh, n. e. cor.		46			D.	20
1167	Charles and Grotto, n. e. cor.			49		S.	6
1168	Charles and Avon, n. e. cor.			46		S.	6
1169	Aurora and St. Albans, n. e. cor.			46		S.	6
1170	Rondo and St. Albans, n. e. cor.			33		S.	6
1171	Rondo and Grotto, n. e. cor.			38		S.	6
1172	Rondo and Avon, n. e. cor.			43		S.	6
1173	Rondo and Fisk, n. e. cor.			45		S.	6
1174	Rondo and Victoria, n. e. cor.			46		S.	6
1175	Indiana and Wabasha, n. w. cor.		69			S.	12
1176	Indiana and Edward, n. w. cor.		69			S.	12
1177	Indiana and Water, n. w. cor.		69			S.	12
1178	Indiana and Hyde, n. w. cor.		69			S.	12
1179	Indiana and Moses, n. w. cor.		69			S.	12
1180	Indiana and Daniel, n. e. cor.		68			S.	12
1181	Indiana and Ethel, n. e. cor.		63			S.	12
1182	Holly and Victorist, n. e. cor.			32		S.	6
1183	St. Anthony and St. Albans, n. e. cor.			43		S.	6
1184	George and South Robert, n. w. cor.		25			S.	6
1185	George and Maurice.		28			S.	12
1186	State and George, s. w. cor.		48			S.	16
1187	State and Dearborn, n. w. cor.		43			S.	16
1188	State and Oakdale.		40			S.	16
1189	Oakdale and Prescott.		28			S.	16
1190	Oakdale and Midway.		18			S.	16
1191	Thomas and Claghorn, n. e. cor.			57		S.	6
1192	Thomas and Gaultier, n. e. cor.			59		S.	6
1193	Thomas and Elfelt, n. e. cor.			58		S.	6
1194	Thomas and Farrington, n. e. cor.			56		S.	6
1195	Thomas and Virginia, n. e. cor.			53		S.	6
1196	Virginia and Lafond, s. w. cor.			57		S.	4
1197	Farrington and Lafond, s. w. cor.			58		S.	6
1198	Elfelt and Lafond, s. w. cor.			59		S.	4
1199	Gaultier and Lafond, s. w. cor.			60		S.	6
1200	Snelling and Edmund.			32		S.	10
1201	Snelling and Blair.			30		S.	18
1202	Snelling and Minnehaha, n. w. cor.			29		S.	16
1203	Snelling and Capitol, n. w. cor.			28		S.	16
1204	Snelling and Wesley, n. w. cor.			27		S.	16
1205	Snelling and G. N. railway, s. w. cor.			24		S.	10
1206	Walker and G. N. railway, s. w. cor.			24		S.	4
1207	Taylor and Charlotte, n. e. cor.			25		S.	6
1208	Taylor and Walker, n. w. cor.			26		S.	6
1209	Taylor and Snelling, n. w. cor.			25		S.	6
1210	Taylor and Asbury, n. w. cor.			24		S.	6
1211	Taylor and Simpson, n. w. cor.			24		S.	6
1212	Taylor and Pascal, n. w. cor.			25		S.	6
1213	Taylor and Holton, n. w. cor.			26		S.	6
1214	Hewitt and Hamline, n. w. cor.			25		S.	6
1215	Hewitt and Sheldon, n. w. cor.			24		S.	6
1216	Hewitt and Holton, n. w. cor.			27		S.	6
1217	Hewitt and Pascal, n. w. cor.			26		S.	6
1218	Hewitt and Simpson, n. w. cor.			24		S.	6
1219	Hewitt and Asbury, n. w. cor.			25		S.	6
1220	Hewitt and Snelling, n. w. cor.			26		S.	6
1221	Hewitt and Walker, n. w. cor.			26		S.	6
1222	Hewitt and Charlotte, n. w. cor.			27		S.	6
1223	Hewitt and Aldine, n. w. cor.			29		S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser-voir.	West Side.		
1224	Wesley and Fry, n. w. cor.			30		S.	6
1225	Wesley and Simpson			26		S.	6
1226	Pascal and Wesley, n. w. cor.			26		S.	6
1227	Pascal and Capitol, n. w. cor.			26		S.	6
1228	Capitol and Simpson, n. w. cor.			27		S.	6
1229	Capitol and Asbury			27		S.	6
1230	Minnehaha and Asbury, n. w. cor.			28		S.	12
1231	Minnehaha and Simpson, n. w. cor.			27		S.	12
1232	Minnehaha and Pascal, n. w. cor.			27		S.	12
1233	Minnehaha and Holton, n. w. cor.			26		S.	12
1234	Minnehaha and Sheldon, n. w. cor.			26		S.	12
1235	Eagle and Franklin, n. w. cor.		59			S.	6
1236	Maria and North, s. w. cor.			67		S.	6
1237	North and Truxton, n. w. cor.			65		S.	6
1238	Banfil and Richmond, n. e. cor.		32			S.	4
1239	North and Bates, n. w. cor.			63		S.	6
1240	Bates and Murray, s. w. cor.			60		S.	6
1241	Hope and Seventh, s. w. cor.			40		S.	6
1242	Arcade and Seventh, s. w. cor.			46		S.	6
1243	Arcade and Dawson			36		S.	6
1244	Front and Como, n. w. cor.			41		S.	12
1245	Front and Grotto, n. e. cor.			43		S.	12
1246	Front and Avon, n. e. cor.			37		S.	12
1247	Front and South, n. e. cor.			38		S.	12
1248	Front and Ryde, n. e. cor.			33		S.	12
1249	Front and Chatsworth, n. e. cor.			31		S.	12
1250	Front and Argyle, n. e. cor.			30		S.	12
1251	Front and Oxford, n. e. cor.			30		S.	12
1252	Front and Churchill, n. e. cor.			32		S.	12
1253	Front and Lexington, n. e. cor.			34		S.	12
1254	Seventh and Newcomb, n. w. cor.			54		S.	16
1255	Seventh and Atlantic, n. w. cor.			54		S.	16
1256	Seventh and Ocean, n. w. cor.			58		S.	16
1257	Minnehaha and Duluth, n. w. cor.			57		S.	6
1258	Minnehaha and Frank, n. w. cor.			51		S.	6
1259	Dayton place, 200 feet west of Maria			72		S.	4
1260	Minnehaha and Seventh, n. e. cor.			55		S.	6
1261	Minnehaha and Forest, n. e. cor.			56		S.	6
1262	Minnehaha and Cypress, n. e. cor.			58		S.	6
1263	Dale and Great Northern Railway Co.			52		S.	24
1264	Burgess and Dale, n. e. cor.			43		S.	6
1265	Topping and Dale, n. e. cor.			44		S.	6
1266	Case and Terrace			76		S.	6
1267	Toronto and Palace, n. w. cor.		33			S.	6
1268	Toronto and Jefferson, s. w. cor.		33			S.	6
1269	Lexington and N. P. railway s. e. cor.			28		S.	16
1270	Third and Robert, n. e. cor.		47			D.	12
1271	Third and Minnesota, n. w. cor.		40			D.	12
1272	Robert and Fourth, s. e. cor.		46			D.	12
1273	Hastings and Maple, n. w. cor.			58		S.	12
1274	Maple and Plum, n. w. cor.			49		S.	12
1275	Sherburne and Grotto, n. e. cor.			48		S.	6
1276	Sherburne and Avon, n. e. cor.			58		S.	6
1277	Sherburne and Victoria, n. e. cor.			47		S.	6
1278	Fremont and Arcade, n. e. cor.			39		S.	6
1279	East Third and Arcade, n. w. cor.			44		S.	6
1280	Conway and Cypress, n. w. cor.			46		S.	6
1281	Sibley, between Fifth and Sixth		48			D.	6
1282	Fremont and Cypress, n. w. cor.			48		S.	6
1283	Forest and Fourth, s. w. cor.			45		S.	6
1284	Forest and Francis, s. w. cor.			46		S.	6
1285	Columbia and Arch, s. w. cor.		30			S.	6
1286	Columbia and Pennsylvania, n. w. cor.		32			S.	6
1287	Sims and Mendota, n. w. cor.			50		S.	6
1288	Sims and Edgerton, n. e. cor.			74		S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1289	York and Jessie, n. w. cor.	.....	.....	73	.....	S.	6
1290	York and Bradley, n. w. cor.	.....	.....	64	.....	S.	6
1291	Fairmount and Avon, n. e. cor.	.....	.....	31	.....	S.	6
1292	Fairmount and Victoria, n. s. cor.	.....	.....	33	.....	S.	6
1293	Lisbon and Pleasant, n. e. cor.	.....	.....	28	.....	S.	6
1294	Pleasant and Western, s. w. cor.	.....	.....	26	.....	S.	6
1295	University, under east end of bridge.	.....	.....	40	.....	S.	20
1296	University, under center of bridge.	.....	.....	40	.....	S.	20
1297	University and Cleveland.	.....	.....	40	.....	S.	20
1298	University, under west end of bridge.	.....	.....	40	.....	S.	20
1299	University and Vandalla, n. w. cor.	.....	.....	42	.....	S.	20
1300	University and Pillsbury, n. w. cor.	.....	.....	46	.....	S.	20
1301	University and Hersey, n. w. cor.	.....	.....	48	.....	S.	20
1302	University and La Salle, n. w. cor.	.....	.....	46	.....	S.	20
1303	University and Carleton, n. w. cor.	.....	.....	43	.....	S.	20
1304	Cayuga and Mississippi, n. w. cor.	.....	.....	86	.....	S.	6
1305	Cayuga, 300 feet west of Mississippi.	.....	.....	72	.....	S.	6
1306	Raymond and University, n. w. cor.	.....	.....	42	.....	S.	16
1307	Raymond and Territorial road, s. w. cor.	.....	.....	39	.....	S.	16
1308	Raymond and Ellis, n. w. cor.	.....	.....	34	.....	S.	16
1309	Raymond and Bayless av. East, n. w. cor.	.....	.....	42	.....	S.	6
1310	Raymond and Manvel, s. w. cor.	.....	.....	35	.....	S.	6
1311	Cudworth and Bayless avenue, n. w. cor.	.....	.....	43	.....	S.	6
1312	Cudworth and Cromwell, n. e. cor.	.....	.....	43	.....	S.	6
1313	Cudworth and Eustis, n. e. cor.	.....	.....	38	.....	S.	6
1314	Pym and Bayless, n. w. cor.	.....	.....	42	.....	S.	12
1315	Pym and Cromwell, n. e. cor.	.....	.....	35	.....	S.	12
1316	Pym and Eustis, n. s. cor.	.....	.....	34	.....	S.	12
1317	Cromwell, 200 feet south of Manvel.	.....	.....	40	.....	S.	6
1318	Manvel and Robbins, n. e. cor.	.....	.....	46	.....	S.	6
1319	Manvel and Bayless, n. e. cor.	.....	.....	41	.....	S.	6
1320	Bayless and Robbins, s. w. cor.	.....	.....	41	.....	S.	16
1321	Bayless, head of Bayless avenue east.	.....	.....	41	.....	S.	16
1322	Hampden and Bradford, n. e. cor.	.....	.....	43	.....	S.	6
1323	Hampden, 400 feet east of Bradford.	.....	.....	41	.....	S.	6
1324	Hampden and Hersey, n. w. cor.	.....	.....	42	.....	S.	6
1325	Sidney and Bradford, n. w. cor.	.....	.....	39	.....	S.	6
1326	Sidney and Raymond, n. e. cor.	.....	.....	42	.....	S.	6
1327	Cayuga and Agate, n. w. cor.	.....	.....	78	.....	S.	6
1328	Cayuga and Courtland, n. e. cor.	.....	.....	60	.....	S.	6
1329	Osceola and Pleasant, n. e. cor.	.....	.....	64	.....	S.	6
1330	Osceola, 400 feet west of Pleasant.	.....	.....	49	.....	S.	6
1331	Osceola and Grotto, n. e. cor.	.....	.....	34	.....	S.	6
1332	Osceola and Avon, n. e. cor.	.....	.....	32	.....	S.	6
1333	Osceola and Victoria, n. e. cor.	.....	.....	34	.....	S.	6
1334	Victoria and St. Clair, n. w. cor.	.....	.....	39	.....	S.	16
1335	Magnolia and Edgerton, n. e. cor.	.....	.....	49	.....	S.	6
1336	Magnolia and Payne, n. w. cor.	.....	.....	53	.....	S.	6
1337	Magnolia and Greenbrier, n. w. cor.	.....	.....	40	.....	S.	6
1338	Snelling and Shield, s. w. cor.	.....	.....	31	.....	S.	16
1339	Snelling and St. Anthony, n. w. cor.	.....	.....	29	.....	S.	16
1340	Snelling and Carroll, n. w. cor.	.....	.....	30	.....	S.	16
1341	Carroll and Fry, n. e. cor.	.....	.....	29	.....	S.	6
1342	Payne and Jessamine, s. w. cor.	.....	.....	46	.....	S.	6
1343	Jessamine and Greenbrier, n. w. cor.	.....	.....	38	.....	S.	6
1344	Jessamine and Edgerton, n. e. cor.	.....	.....	43	.....	S.	6
1345	Goodhue and Duke, n. e. cor.	.....	.....	33	.....	S.	6
1346	Payne and Geranium, s. w. cor.	.....	.....	43	.....	S.	6
1347	Payne and Rose, s. w. cor.	.....	.....	40	.....	S.	6
1348	Edgerton and Jenks, n. w. cor.	.....	.....	73	.....	S.	12
1349	Edgerton and Lawson, n. w. cor.	.....	.....	66	.....	S.	12
1350	Edgerton and Geranium, s. w. cor.	.....	.....	39	.....	S.	12
1351	Edgerton and Rose, s. w. cor.	.....	.....	37	.....	S.	12
1352	Jessamine and Jesse, n. e. cor.	.....	.....	31	.....	S.	6
1353	Jessamine and Bradley, n. e. cor.	.....	.....	32	.....	S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Rees- votr.	West Side.		
1354	Cook and Edgerton, n. e. cor.			57		8.	6
1355	Robert and Dearborn, n. w. cor.		22			8.	6
1356	Robert and Louisa, n. w. cor.					8.	6
1357	Robert and Elizabeth, n. w. cor.		13			8.	6
1358	Cook and Greenbrier, n. w. cor.			43		8.	6
1359	Beaumont and Payne, n. w. cor.			85		8.	6
1360	Aurora and Victoria, n. w. cor.			45		8.	6
1361	Aurora and Milton, n. e. cor.			48		8.	6
1362	Fuller and Victoria, n. w. cor.			47		8.	6
1363	Fuller and Milton, n. e. cor.			40		8.	6
1364	Martin and Victoria, n. w. cor.			48		8.	6
1365	Martin and Milton, n. e. cor.			40		8.	6
1366	St. Anthony and Victoria, n. w. cor.			47		8.	6
1367	St. Anthony and Milton, n. e. cor.			48		8.	6
1368	Victoria and Marshall, n. w. cor.			34		8.	16
1369	Cook and Walsh, n. e. cor.			46		8.	6
1370	Cook and Weide, n. e. cor.			49		8.	6
1371	Cook and Mendota, n. w. cor.			45		8.	6
1372	Snelling and Marshall, s. w. cor.			32		8.	16
1373	Snelling and Selby, s. w. cor.			26		8.	16
1374	Snelling and Hagau, s. w. cor.			27		8.	16
1375	Snelling and Ashland, s. w. cor.			26		8.	16
1376	Snelling and Summit, s. w. cor.			22		8.	16
1377	Snelling and Grand, s. w. cor.			19		8.	16
1378	Snelling and Lincoln			17		8.	16
1379	Snelling and Goodrich			16		8.	16
1380	Summit and Macallester, s. e. cor.			30		8.	4
1381	Jessamine and Weide, n. e. cor.			47		8.	6
1382	Jessamine and Arcade, n. e. cor.			45		8.	6
1383	Jessamine and Mendota, n. w. cor.			44		8.	6
1384	Jessamine and Forest, n. w. cor.			39		8.	6
1385	Geranium and Forest, n. w. cor.			42		8.	6
1386	Burr and Lawson, s. w. cor.			56		8.	6
1387	Burr and Cook, s. w. cor.			43		8.	6
1388	Selby and Milton, n. e. cor.			36		8.	6
1389	Ashland and Milton, n. e. cor.			34		8.	6
1390	Victoria and Ashland, n. w. cor.			31		8.	16
1391	Dayton and Milton, n. e. cor.			27		8.	6
1392	Clark and Whitall, n. w. cor.			66		8.	6
1393	Clark and York, s. w. cor.			56		8.	6
1394	Clark and Lookout place			60		8.	6
1395	Clark and Case, s. w. cor.			65		8.	6
1396	Iglehart and Milton, n. e. cor.			36		8.	6
1397	Iglehart and Chatsworth, n. e. cor.			39		8.	6
1398	Iglehart and Oxford, n. e. cor.			48		8.	6
1399	Tuscarora and Victoria, n. e. cor.		29			8.	6
1400	Whitall and Bradley, n. w. cor.			53		8.	6
1401	Rondo and Milton, n. e. cor.			43		8.	6
1402	Whitall and De Soto, n. w. cor.			63		8.	6
1403	De Soto and York, n. w. cor.			61		8.	6
1404	Mound and Burns			44		8.	12
1405	Mayall Alley, 125 feet north of Seventh		32			8.	4
1406	Burns and Clermont			42		8.	6
1407	Cross and Lexington, n. e. cor.			40		8.	6
1408	Workhouse, n. e. cor.			34		8.	6
1409	Workhouse, s. e. cor.			34		8.	6
1410	Burns and Earl, n. e. cor.			41		8.	6
1411	Burns and Hester, n. e. cor.			48		8.	6
1412	Burns and Griffith, n. w. cor.			53		8.	6
1413	Van Slyke and Lexington, n. e. cor.			41		8.	6
1414	Van Slyke and Horton, n. e. cor.			42		8.	6
1415	Van Slyke and Argyle			38		8.	6
1416	Argyle and Cross, s. w. cor.			39		8.	6
1417	Tuscarora and Milton, n. e. cor.		30			8.	6
1418	Francis and Cypress, n. w. cor.			34		8.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1419	Robbins and Raymond place, s. w. cor....			35		S.	6
1420	Bayless and Tainter, n. w. cor....			46		S.	16
1421	Wheeler and Bayless, n. e. cor....			46		S.	12
1422	Wheeler and Ada place, n. w. cor....			39		S.	12
1423	Wheeler and Everett court....			40		S.	12
1424	Everett court and G. N. Ry., n. w. cor....			41		S.	6
1425	Raymond and Kendrick, n. w. cor....			41		S.	8
1426	Raymond and Blake, n. w. cor....			44		S.	6
1427	Raymond and Att'y place, s. w. cor....			42		S.	6
1428	Raymond and Langford avenue, s. w. cor.			39		S.	6
1429	Priscilla and Raymond, n. e. cor....			41		S.	6
1430	Priscilla, 500 feet east of Raymond....			43		S.	6
1431	Pratt and Raymond, n. e. cor....			40		S.	6
1432	Pratt and Alden, n. w. cor....			43		S.	6
1433	Pratt and Gibbs, n. w. cor....			45		S.	6
1434	Blake and Langford place East, n. e. cor.			44		S.	18
1435	Blake and Scudder, n. e. cor....			44		S.	6
1436	Scudder and Att'y place....			30		S.	16
1437	Scudder and Gordon, n. e. cor....			36		S.	6
1438	Langford and Scudder, n. w. cor....			36		S.	16
1439	Langford and Knapp, n. e. cor....			25		S.	16
1440	County road and Dooley, s. w. cor....			35		S.	16
1441	Dawson and Francis, n. w. cor....			25		S.	16
1442	Crocus place....			46		S.	6
1443	Delos and Hall, n. w. cor....			38		S.	4
1444	Langford P. P., W., and Bayless, s.w. cor.		20			S.	6
1445	Langford P. P., W., and N.P.Ry., n.w. cor.			45		S.	12
1446	Langford P. P., W., and Blake, s. w. cor.			35		S.	6
1447	Gordon and Langford, P. P., W., n.w. cor.			37		S.	12
1448	Gordon and Nourse....			36		S.	12
1449	Goff and Winifred, n. w. cor....			37		S.	12
1450	Dooley and Chelmsford, n. w. cor....		38			S.	6
1451	Winifred and Hall, n. w. cor....			23		S.	6
1452	Roble and Andrew, n. w. cor....		31			S.	6
1453	Iglehart and Fairview, n. w. cor....		32			S.	6
1454	Hall and Congress, n. w. cor....			31		S.	6
1455	Marshall and Amos, n. e. cor....		27			S.	6
1456	Midway and Mt. Hope, n. e. cor....			33		S.	12
1457	Midway and Harvard, n. w. cor....		18			S.	6
1458	Midway and Woodbury, n. w. cor....		21			S.	6
1459	Midway and Brown, n. w. cor....		23			S.	6
1460	Prescott and Mt. Hope, n. w. cor....		38			S.	6
1461	Prescott and Harvard, n. w. cor....		22			S.	6
1462	Prescott and Woodbury, n. w. cor....		22			S.	6
1463	Langford P. P. E. and Gordon, n. e. cor....		24			S.	6
1464	Knapp and Langford Park place East....			41		S.	6
1465	Knapp and Langford Park place West....			42		S.	6
1466	Knapp and Langford avenue, n. e. cor....			42		S.	6
1467	Reaney and St. P. & D. railway, n.w. cor.			33		S.	6
1468	Armstrong and View, n. e. cor....			78		S.	6
1469	Armstrong and Victoria, n. e. cor....		32			S.	6
1470	Armstrong and Milton, n. e. cor....		28			S.	6
1471	Armstrong and Chatsworth, n. e. cor....		26			S.	6
1472	St. Peter and Fifth, s. e. cor....			34		S.	6
1473	Martin and St. Albans, n. e. cor....		33			D.	6
1474	Martin and Grotto, n. e. cor....			45		S.	6
1475	Wabasha and Sixth, s. e. cor....		37			D.	6
1476	Armstrong and Warsaw, n. e. cor....		31			D.	6
1477	Armstrong and Drake, n. w. cor....		42			S.	6
1478	St. Anthony and Grotto, n. e. cor....			42		D.	6
1479	St. Anthony and Avon, n. e. cor....			45		S.	6
1480	St. Anthony and Flisk, n. e. cor....			46		S.	6
1481	Whitall and Jessie, n. w. cor....			60		S.	6
1482	Carroll and Chatsworth, n. e. cor....			42		S.	6
1483	Warsaw and Audubon, n. w. cor....		35			S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadina's Lake.	Reser- voir.	West Side.		
1484	Whitall and Edgerton, n. e. cor.....			87		S.	6
1485	Dayton and Laura, n. w. cor.....			31		S.	6
1486	Dayton and Amos, n. w. cor.....			33		S.	6
1487	Dayton and Moore, n. e. cor.....			43		S.	6
1488	Dayton and Wilder, n. s. cor.....			44		S.	6
1489	Dayton and Cleveland, n. e. cor.....			45		S.	6
1490	Prior and Dayton, n. w. cor.....			38		S.	6
1491	Westminster and Lookout place, n. w. cor.			64		S.	6
1492	Lookout place and Arkwright, n. w. cor....			63		S.	6
1493	Dayton and Chatsworth, n. e. cor.....			40		S.	6
1494	Dayton and Oxford, n. e. cor.....			45		S.	6
1495	Wabasha and Fifth, n. e. cor.....		34			D.	6
1496	Randolph and Toronto, n. w. cor.....		38			S.	6
1497	St. Anthony and Fairview, n. w. cor.....			30		S.	6
1498	Jessie and Jenks, s. w. cor.....			72		S.	6
1499	Jessie and Lawson, s. w. cor.....			65		S.	6
1500	Jessie and Cook, s. w. cor.....			53		S.	6
1501	Jessie and Magnolia, s. w. cor.....			40		S.	6
1502	Laurel and Victoria, n. w. cor.....			32		S.	6
1503	Laurel and Milton, n. e. cor.....			38		S.	6
1504	Laurel and Chatsworth, n. e. cor.....			30		S.	6
1505	Laurel and Oxford, n. e. cor.....			31		S.	6
1506	Lincoln and Chatsworth, n. e. cor.....			38		S.	6
1507	Lincoln and Oxford, n. e. cor.....			38		S.	6
1508	Magnolia and Walsh, n. e. cor.....			48		S.	6
1509	Magnolia and Weide, n. e. cor.....			47		S.	6
1510	Magnolia and Mendota, n. e. cor.....			42		S.	6
1511	Magnolia and Forest, n. e. cor.....			40		S.	6
1512	St. Anthony and Roy.....			29		S.	6
1513	St. Anthony and Fry, n. e. cor.....			29		S.	6
1514	St. Anthony and Pierce, n. e. cor.....			31		S.	6
1515	St. Anthony and Aldine, n. w. cor.....			32		S.	6
1516	St. Anthony and Herschel, n. w. cor.....			33		S.	6
1517	St. Anthony and Wheeler avenue, n. w. cor.			34		S.	6
1518	St. Anthony and Bacon, n. w. cor.....			34		S.	6
1519	Goodrich and Milton, n. e. cor.....			38		S.	6
1520	Goodrich and Chatsworth, n. e. cor.....			40		S.	6
1521	Goodrich and Oxford, n. e. cor.....			35		S.	6
1522	Mt. Ida and Rivoli, n. e. cor.....			65		S.	6
1523	Osceola and Milton, n. e. cor.....			45		S.	6
1524	Osceola and Chatsworth, n. e. cor.....			36		S.	6
1525	Evergreen and Chatsworth, n. w. cor.....			39		S.	6
1526	Evergreen and Oxford, n. e. cor.....			32		S.	6
1527	Arcade and Geranium, s. w. cor.....			46		S.	12
1528	Arcade and Rose, s. w. cor.....			45		S.	12
1529	Rose and Weide, n. e. cor.....			46		S.	6
1530	Rose and Walsh, n. e. cor.....			45		S.	6
1531	Fairview and Shields.....			37		S.	16
1532	Geranium and Weide, n. e. cor.....			47		S.	6
1533	Geranium and Walsh, n. e. cor.....			45		S.	6
1534	Geranium and Greenbrier, n. e. cor.....			40		S.	6
1535	Fairview and Sherburne.....			40		S.	16
1536	St. Clair and Roeb.....			43		S.	12
1537	St. Clair and Milton, n. w. cor.....			77		S.	12
1538	St. Clair and Chatsworth, n. e. cor.....			38		S.	12
1539	St. Clair and Ridgewood avenue.....			33		S.	12
1540	St. Clair and Oxford, n. e. cor.....			30		S.	12
1541	Jessamine and Walsh, n. e. cor.....			46		S.	6
1542	Charles and Fairview, n. w. cor.....			40		S.	6
1543	Charles, 500 feet west of Fairview.....			37		S.	6
1544	Wheeler and Shields, n. w. cor.....			36		S.	6
1545	Jessamine and Burr, n. e. cor.....			42		S.	6
1546	Beacon and Shields, n. w. cor.....			36		S.	4
1547	Jessamine and De Soto, n. e. cor.....			46		S.	6
1548	Jessamine and Clark, n. w. cor.....			50		S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reaser- voir.	West Side.		
1549	Jessamine and Arkwright, n. e. cor.....	.....	.....	46	.....	S.	6
1550	Portland and Victoria, n. e. cor.....	.....	.....	32	.....	S.	6
1551	Jessamine and Woodland, n. e. cor.....	.....	.....	44	.....	S.	6
1552	Jessamine and McMenemy, n. e. cor.....	.....	.....	51	.....	S.	6
1553	Jessamine, 120 feet east of Mississippi....	.....	.....	70	.....	S.	6
1554	Territorial road and Hunt place, n.w. cor.	.....	.....	43	.....	S.	6
1555	Territorial road and Cromwell, n. e. cor..	.....	.....	44	.....	S.	6
1556	Territorial road and Eustis, n. e. cor.....	.....	.....	40	.....	S.	6
1557	Hague avenue and Milton street, n. e. cor.	.....	.....	35	.....	S.	6
1558	Hague avenue and Chatsworth, n. e. cor..	.....	.....	31	.....	S.	6
1559	Hague avenue and Oxford, n. e. cor.....	.....	.....	32	.....	S.	6
1560	Hague avenue and Lexington, n. e. cor....	.....	.....	36	.....	S.	6
1561	Sixth and Mulberry, s. w. cor.....	.....	.....	62	.....	D.	6
1562	Payne and Maryland, s. w. cor.....	.....	.....	38	.....	S.	6
1563	Payne and Hawthorne, s. w. cor.....	.....	.....	40	.....	S.	6
1564	Payne and Orange, s. w. cor.....	.....	.....	39	.....	S.	6
1565	Payne and Hyacinth, s. w. cor.....	.....	.....	38	.....	S.	6
1566	Payne and Ivy, s. w. cor.....	.....	.....	36	.....	S.	6
1567	Nourse and N. P. railroad, n. w. cor....	.....	.....	35	.....	S.	6
1568	De Soto and Jenks, s. w. cor.....	.....	.....	61	.....	S.	6
1569	De Soto and Lawson, s. w. cor.....	.....	.....	49	.....	S.	6
1570	Charles and Arundel, n. e. cor.....	.....	.....	57	.....	S.	6
1571	Virginia and Blair, n. w. cor.....	.....	.....	58	.....	S.	4
1572	Virginia and Minnehaha, s. w. cor.....	.....	.....	57	.....	S.	4
1573	Capitol and Fry, n. e. cor.....	.....	.....	29	.....	S.	6
1574	Capitol and Aldine, n. e. cor.....	.....	.....	25	.....	S.	6
1575	Capitol and Wheeler, n. e. cor.....	.....	.....	30	.....	S.	6
1576	Arch and Fairview, n. w. cor.....	.....	.....	52	.....	S.	6
1577	Arch and Warren.....	.....	.....	36	.....	S.	6
1578	Arch and Mt. Vernon, n. e. cor.....	.....	.....	49	.....	S.	6
1579	Arch, 300 feet east of Linden.....	.....	.....	71	.....	S.	6
1580	Arch, 100 feet west of Columbia.....	.....	.....	84	.....	S.	6
1581	Gaultier and Topping, n. w. cor.....	.....	.....	62	.....	S.	6
1582	Gaultier and Burgess, n. w. cor.....	.....	.....	62	.....	S.	6
1583	Gaultier and Stinson, n. w. cor.....	.....	.....	56	.....	S.	6
1584	Gaultier and Hatch, n. w. cor.....	.....	.....	49	.....	S.	6
1585	Gaultier and Lawson, n. w. cor.....	.....	.....	44	.....	S.	6
1586	Gaultier and Cook, s. w. cor.....	.....	.....	46	.....	S.	6
1587	Stinson and Farrington, n. e. cor.....	.....	.....	52	.....	S.	6
1588	Minnehaha and Duluth railway.....	.....	.....	78	.....	S.	12
1589	Minnehaha and Greenbrier, n. e. cor.....	.....	.....	77	.....	S.	12
1590	Minnehaha and Walsh, n. e. cor.....	.....	.....	67	.....	S.	12
1591	Minnehaha and Weide, n. e. cor.....	.....	.....	59	.....	S.	12
1592	Woodbridge and Atwater, n. w. cor.....	.....	.....	63	.....	S.	6
1593	Woodbridge and Milford, n. w. cor.....	.....	.....	62	.....	S.	6
1594	Woodbridge and Wayzata, n. w. cor.....	.....	.....	61	.....	S.	6
1595	Milford and Simcoe, n. w. cor.....	.....	.....	62	.....	S.	6
1596	Milford and Albemarle, n. w. cor.....	.....	.....	62	.....	S.	6
1597	Reaney and Duluth, n. w. cor.....	.....	.....	62	.....	S.	6
1598	Reaney and Atlantic, n. w. cor.....	.....	.....	60	.....	S.	6
1599	Reaney and English, n. w. cor.....	.....	.....	53	.....	S.	6
1600	Rice and Great Northern railway.....	.....	.....	56	.....	S.	12
1601	Rice and Capitol.....	.....	.....	59	.....	S.	12
1602	Fauquier and Duluth, n. w. cor.....	.....	.....	63	.....	S.	6
1603	Milford and Rice, n. w. cor.....	.....	.....	62	.....	S.	6
1604	Atlantic and Fauquier, n. w. cor.....	.....	.....	61	.....	S.	6
1605	Fauquier, 800 feet east of Atlantic.....	.....	.....	57	.....	S.	6
1606	Cleveland and Myrtle, s. w. cor.....	.....	.....	39	.....	S.	16
1607	Cleveland and Wabash, s. w. cor.....	.....	.....	38	.....	S.	16
1608	Cleveland, 300 feet n. of Milwaukee Ry..	.....	.....	40	.....	S.	16
1609	Cleveland and Milwaukee railway.....	.....	.....	39	.....	S.	16
1610	Seventh and English, n. w. cor.....	.....	.....	56	.....	S.	16
1611	Phalen and Seventh, n. w. cor.....	.....	.....	55	.....	S.	12
1612	Phalen and Kerwin.....	.....	.....	50	.....	S.	12
1613	Phalen and Brand, s. w. cor.....	.....	.....	57	.....	S.	12



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Recess- voir.	West Side.		
1614	Phalen and Chicago, St. P. & Omaha Ry.			56		S.	12
1615	Phalen and Stillwater, s. w. cor.			35		S.	6
1616	Cleveland and Rondo.			55		D.	12
1617	Earl and Dawson, n. w. cor.			58		S.	12
1618	Margaret and Frank, n. w. cor.			53		S.	6
1619	Margaret and Gotzian.			49		S.	6
1620	Carroll and Wheeler, n. w. cor.			32		S.	6
1621	Fremont and Earl n. w. cor.			57		S.	6
1622	Rice and Hatch, n. w. cor.			59		S.	10
1623	Rice and Lawson, n. w. cor.			59		S.	10
1624	Rice and Cook, n. w. cor.			50		S.	10
1625	Rice and Olive, n. w. cor.			57		S.	10
1626	Cook and Rice, n. e. cor.			59		S.	6
1627	Cook and Park avenue, n. w. cor.			58		S.	6
1628	Cook and Sylvan, n. w. cor.			51		S.	6
1629	Hastings and Forest, n. w. cor.			57		S.	12
1630	Rice and Lyton.			64		S.	10
1631	Rice and Wayzata, s. w. cor.			61		S.	10
1632	Litchfield and Rice, n. e. cor.			61		S.	6
1633	Litchfield and Park, n. w. cor.			56		S.	6
1634	Litchfield and Sylvan, n. w. cor.			50		S.	6
1635	Fuller and Chatsworth, n. e. cor.			49		S.	6
1636	Fuller and Oxford, n. e. cor.			50		S.	6
1637	Fuller, 200 feet west of Oxford.			49		S.	6
1638	Hastings and Cypress, n. e. cor.			54		S.	12
1639	Hastings and Earl, n. e. cor.			51		S.	12
1640	Hastings and Frank, n. w. cor.			56		S.	12
1641	Earl and Pacific, n. w. cor.			50		S.	12
1642	Atwater and Rice, n. e. cor.			63		S.	6
1643	Atwater and Park, n. w. cor.			62		S.	6
1644	Atwater and Sylvan, n. w. cor.			59		S.	6
1645	Earl and McLean, n. w. cor.			47		S.	12
1646	Earl and Suburban, n. w. cor.			46		S.	12
1647	Sycamore and Rice, n. e. cor.			63		S.	12
1648	Sycamore and Park, n. e. cor.			63		S.	12
1649	Sycamore and Sylvan, n. w. cor.			61		S.	12
1650	Sycamore and Lightner, s. w. cor.			64		S.	12
1651	Sycamore and Jackson, s. w. cor.			66		S.	12
1652	Sycamore and Courtland, s. w. cor.			66		S.	12
1653	Maria and McLean, n. w. cor.			73		S.	6
1654	Jackson, under bridge, at roundhouse.			69		S.	12
1655	Jackson, under bridge, at roundhouse.			69		S.	12
1656	Jackson, north line of G. N. Ry., n. w. cor.			60		S.	12
1657	Jackson and Capitol, n. w. cor.			63		S.	12
1658	Lafond and Milton, n. e. cor.			44		S.	6
1659	Maria and McLean, s. w. cor.			73		S.	6
1660	Maria and Lizzie, s. e. cor.			66		S.	6
1661	Capitol and Sylvan, n. e. cor.			62		S.	6
1662	Capitol and Lightner place, n. e. cor.			66		S.	6
1663	Stuart and Tuscarora, s. w. cor.		36			S.	6
1664	Stuart and Bay, n. e. cor.		34			S.	6
1665	Bay and Logan, n. w. cor.		37			S.	6
1666	Bay and Tuscarora, n. w. cor.		35			S.	6
1667	Hudson and Forest, n. w. cor.			58		S.	6
1668	Hudson and Cypress, n. w. cor.			50		S.	6
1669	Seiby and Chatsworth, n. e. cor.			32		S.	6
1670	Seiby and Oxford, n. e. cor.			36		S.	6
1671	Mound and Clearmont, n. w. cor.			50		S.	6
1672	Mound and Thorn.			46		S.	6
1673	Mound, 335 feet west of Earl.			34		S.	6
1674	Courtland and Agate, n. e. cor.			66		S.	10
1675	Courtland and York, n. e. cor.			61		S.	10
1676	Courtland and Poplar, n. e. cor.			63		S.	10
1677	Hall and Colorado, s. w. cor.		21			S.	6
1678	Hall and Prospect terrace, s. w. cor.		22			S.	6

# OF THE CITY OF ST. PAUL, FOR 1898.

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1679	Marshall and Laura, n. w. cor.....			29		s.	
1680	Marshall and Fairview, n. w. cor.....			28		s.	
1681	Marshall and Wheeler, n. w. cor.....			29		s.	
1682	View and Juno, n. w. cor.....		32			s.	
1683	Minnehaha and Hamline, n. w. cor.....			27		s.	
1684	Hall and Robie, n. w. cor.....		25			s.	
1685	Courtland and Case, n. e. cor.....			64		s.	
1686	Courtland and Jenks, n. e. cor.....			65		s.	
1687	Courtland and Lawson, n. e. cor.....			64		s.	
1688	Courtland and Cook.....			64		s.	
1689	Courtland and Magnolia, n. w. cor.....			63		s.	
1690	Courtland and Jessamine, n. w. cor.....			62		s.	
1691	Courtland and Geranium, n. w. cor.....			61		s.	
1692	Courtland and Rose, n. w. cor.....			62		s.	
1693	Courtland and Maryland, s. w. cor.....			64		s.	
1694	Congress and Goff, n. w. cor.....		40			s.	
1695	Agate and York, s. w. cor.....			80		s.	
1696	Agate and Elk.....			62		s.	
1697	Agate, 250 feet south of Granite.....			52		s.	
1698	Pleasant and St. Albans, s. w. cor.....			66		s.	
1699	Hoffman and Hudson, s. w. cor.....			78		s.	
1700	St. Albans, 300 feet south of Fairmount..			51		s.	
1701	Winifred and Winslow, n. w. cor.....		25			s.	
1702	Winifred and Bidwell, n. w. cor.....		21			s.	
1703	Winifred and Bellows, n. w. cor.....		21			s.	
1704	Wacouta, between Third and Fourth.....			62		D.	
1705	Fourth and Sibley, n. e. cor.....			55		D.	
1706	Sibley and Union Depot.....		70			s.	
1707	Evergreen and Victoria, n. w. cor.....			36		s.	
1708	Evergreen and Milton, n. e. cor.....			47		s.	
1709	Sherburne and Milton, n. e. cor.....			49		s.	
1710	Sherburne and Chatsworth, n. e. cor.....			51		s.	
1711	Sixth, between Sibley and Wacouta.....		48			s.	
1712	Dearborn and Livingston, n. s. cor.....		20			s.	
1713	Charles and Milton, n. e. cor.....			50		s.	
1714	Charles and Victoria, n. e. cor.....			49		s.	
1715	Fifth and Broadway, n. e. cor.....	54				D.	
1716	Fifth and Pils, n. e. cor.....	52				s.	
1717	Fifth and Olive, n. e. cor.....	53				s.	
1718	Edmund and Avon, n. e. cor.....			52		s.	
1719	Edmund and Victoria, n. e. cor.....			50		s.	
1720	Edmund and Milton, n. e. cor.....			48		s.	
1721	Woodward and John, n. e. cor.....	37				s.	
1722	Grand avenue and Lexington, n. e. cor.....			40		s.	
1723	Leslie and Milton, n. e. cor.....			36		s.	
1724	Leslie and Chatsworth, n. e. cor.....			31		s.	
1725	Thomas and Victoria, n. w. cor.....			51		s.	
1726	Thomas and Milton, n. e. cor.....			50		s.	
1727	Thomas and Chatsworth, n. e. cor.....			52		s.	
1728	Thomas and St. Albans, n. e. cor.....			50		s.	
1729	Thomas and Grotto, n. e. cor.....			51		s.	
1730	Lafond and Avon, n. e. cor.....			48		s.	
1731	Lafond and Victoria, n. e. cor.....			56		s.	
1732	Randolph and Webster, n. w. cor.....		42			s.	
1733	Yankee and Ann, n. e. cor.....		40			s.	
1734	Van Buren and Grotto, n. e. cor.....			42		s.	
1735	Van Buren and Avon, n. e. cor.....			48		s.	
1736	Van Buren and Grotto, n. e. cor.....			53		s.	
1737	Van Buren and St. Albans, n. e. cor.....			55		s.	
1738	Van Buren and Kent, n. w. cor.....			57		s.	
1739	Van Buren and Mackubin, n. e. cor.....			58		s.	
1740	Congress and Winslow, n. w. cor.....		24			s.	
1741	Congress and Bidwell, n. w. cor.....		24			s.	
1742	Congress and Bellows, n. w. cor.....		21			s.	

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1743	Congress and Charlton, n. e. cor.....			19		S.	6
1744	Fred, in rear of Lincoln school.....				80	S.	4
1745	View and Watson, n. w. cor.....			33		S.	6
1746	Watson and Victoria, n. e. cor.....			29		S.	6
1747	Watson and Milton, n. e. cor.....			28		S.	6
1748	Watson and Chatsworth, n. e. cor.....			27		S.	6
1749	Wabasha, head of Eighth.....			33		D.	6
1750	Fifth and Market, s. w. cor.....			32		S.	6
1751	Logan and Canton, n. e. cor.....			34		S.	6
1752	Logan and Orrin.....			35		S.	6
1753	Elfelt and Blair, s. w. cor.....				60	S.	4
1754	Fourth, east of St. Paul & Duluth Ry.....			70		D.	12
1755	Manitoba and Rice, n. e. cor.....				62	S.	6
1756	Manitoba and Park, n. w. cor.....				60	S.	6
1757	Manitoba and Sylvan, n. w. cor.....				58	S.	6
1758	Front and Sylvan, n. w. cor.....				46	S.	6
1759	Front and Park, n. w. cor.....				59	S.	6
1760	Fuller and St. Albans, n. e. cor.....				46	S.	6
1761	Charles and Prior, n. e. cor.....				39	S.	6
1762	Charles, 500 feet east of Prior.....				39	S.	6
1763	Wacouta and Fourth, s. e. cor.....			59		D.	12
1764	Dayton and Snelling, n. w. cor.....				29	S.	6
1765	Dayton and Fry, n. w. cor.....				32	S.	6
1766	Dayton and Pierce, n. w. cor.....				33	S.	6
1767	Dayton and Herschell, n. e. cor.....				33	S.	6
1768	Dayton and Wheeler, n. w. cor.....				32	S.	6
1769	Dayton and Fairview, n. e. cor.....				30	S.	6
1770	Wacouta and Fifth, n. e. cor.....			52		D.	12
1771	Fifth, midway bet. Sibley and Wacouta.....			51		S.	12
1772	Sibley and Fourth, n. e. cor.....			49		D.	6
1773	Fry and Minnehaha, n. w. cor.....				28	S.	4
1774	Blair and Fry, n. w. cor.....				30	S.	6
1775	Van Buren and Fry, n. w. cor.....				28	S.	6
1776	Van Buren and Aldine, n. e. cor.....				27	S.	6
1777	Van Buren and Wheeler, n. e. cor.....				29	S.	6
1778	Sibley, between Third and Fourth.....			56		D.	6
1779	Lawson and Greenbrier, n. w. cor.....				57	S.	6
1780	Lawson and Walsh, n. w. cor.....				42	S.	6
1781	Lawson and Welde, n. w. cor.....				48	S.	6
1782	Lawson and Mendota, n. w. cor.....				47	S.	6
1783	Raymond and Tainter, n. w. cor.....				37	S.	6
1784	Maryland and Arcade, n. w. cor.....				44	S.	6
1785	Maryland and Welde, n. w. cor.....				46	S.	6
1786	Maryland and Walsh, n. w. cor.....				45	S.	6
1787	Maryland and Greenbrier, n. w. cor.....				44	S.	6
1788	Maryland and Edgerton, n. e. cor.....				36	S.	6
1789	Erie and Clay, n. w. cor.....			35		S.	6
1790	Erie and Grace, n. w. cor.....			33		S.	6
1791	Erie and St. Clair, s. w. cor.....			31		S.	6
1792	Forest, 200 feet south of Wells.....				63	D.	6
1793	Congress and Kansas City railway.....			50		S.	4
1794	Avon and Martin, s. w. cor.....				49	S.	4
1795	Wacouta and Sixth, s. w. cor.....			49		D.	12
1796	Linwood and Grotto, n. e. cor.....				34	S.	6
1797	Ashland and Chatsworth, n. e. cor.....				32	S.	6
1798	Stinson and Western, n. e. cor.....				49	S.	6
1799	Third, at west end of bridge.....			69		D.	12
1800	Minnehaha and Rivoli, n. e. cor.....				50	S.	6
1801	Linden, head of Glencoe.....				41	S.	6
1802	Linden and Arch, s. w. cor.....				53	S.	6
1803	Concord and Curtis.....			67		S.	12
1804	Concord, 400 feet north of Curtis.....			68		D.	12
1805	Concord and Page, n. e. cor.....			69		D.	12
1806	Concord and Witham, n. e. cor.....			66		S.	12

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street M. in.
		Low Service.		High Service.			
		Phalen Lake.	Vadon's Lake.	Reser- voir.	West Side.		
1807	Concord and Hoyt, n. w. cor.....	.....	64	.....	.....	5.	12
1808	Winslow and Prospect terrace, s. w. cor..	.....	21	.....	.....	5.	6
1809	Duluth and C., St. P., M. & O. railway..	.....	.....	56	.....	5.	6
1810	Jessamine and Rice, n. e. cor.....	.....	.....	57	.....	5.	6
1811	Jessamine and Sylvan, n. w. cor.....	.....	.....	48	.....	5.	6
1812	Winnipeg and Sylvan, n. w. cor.....	.....	.....	61	.....	5.	6
1813	Aurora and Chatsworth, n. e. cor.....	.....	.....	48	.....	5.	6
1814	John and Eighth, s. w. cor.....	43	.....	.....	.....	5.	4
1815	Olive and Sixth, n. e. cor.....	45	.....	.....	.....	5.	4
1816	Jessamine and Park avenue, n. w. cor....	.....	.....	54	.....	5.	6
1817	Winnipeg and Park avenue, n. w. cor....	.....	.....	62	.....	5.	6
1818	Winnipeg and Rice, n. e. cor.....	.....	.....	63	.....	5.	6
1819	Winslow and Delos, s. w. cor.....	.....	22	.....	.....	5.	6
1820	Audubon and Drake, n. w. cor.....	.....	41	.....	.....	5.	6
1821	University and Ashton.....	.....	.....	82	.....	5.	16
1822	View and James, n. w. cor.....	.....	30	.....	.....	5.	6
1823	View and Palace, s. w. cor.....	.....	30	.....	.....	5.	6
1824	Dooley and Raymond, n. e. cor.....	.....	.....	21	.....	5.	6
1825	Capitol and Fairview, n. e. cor.....	.....	.....	32	.....	5.	6
1826	Erie and Jefferson, s. w. cor.....	.....	37	.....	.....	5.	6
1827	Erie and Cascade, n. w. cor.....	.....	39	.....	.....	5.	6
1828	Hewitt and Syndicate, n. w. cor.....	.....	.....	27	.....	5.	6
1829	Nugent and C. M. & St. P. Ry. Short Line	.....	40	.....	.....	5.	6
1830	Pleasant and Lawton, s. e. cor.....	.....	22	.....	.....	5.	6
1831	Pleasant and Goodrich, s. e. cor.....	.....	18	.....	.....	5.	6
1832	Pine and Eighth, s. e. cor.....	42	.....	.....	.....	5.	4
1833	Langford and Knapp.....	.....	.....	38	.....	5.	12
1834	Langford and Gordon, n. w. cor.....	.....	.....	39	.....	5.	12
1835	Langford and Dooley, n. e. cor.....	.....	.....	36	.....	5.	12
1836	Gordon and Dooley, s. w. cor.....	.....	.....	32	.....	5.	6
1837	Carter and Gordon.....	.....	.....	30	.....	5.	6
1838	Carter and Keston, n. w. cor.....	.....	.....	20	.....	5.	6
1839	Carter, 400 feet east of Keston.....	.....	.....	19	.....	5.	6
1840	Carter and County road, n. w. cor.....	.....	.....	27	.....	5.	6
1841	Keston and Dooley, n. w. cor.....	.....	.....	21	.....	5.	6
1842	Keston and Doswell, s. w. cor.....	.....	.....	25	.....	5.	6
1843	Selby and Saratoga, n. w. cor.....	.....	.....	24	.....	5.	6
1844	Selby and Pascal, under bridge.....	.....	.....	25	.....	5.	6
1845	Selby and Albert, under bridge.....	.....	.....	26	.....	5.	6
1846	Selby and Hamlin, n. e. cor.....	.....	.....	27	.....	5.	6
1847	Selby and Syndicate, n. e. cor.....	.....	.....	20	.....	5.	6
1848	L'Orient and Minnehaha, s. w. cor.....	.....	34	.....	.....	5.	6
1849	Hope and Francis, s. w. cor.....	.....	.....	43	.....	5.	6
1850	Selby and Griggs, n. e. cor.....	.....	.....	27	.....	5.	6
1851	Selby and Dunlap, n. e. cor.....	.....	.....	29	.....	5.	6
1852	Selby and Lexington, n. e. cor.....	.....	.....	37	.....	5.	6
1853	Robert and Sixth, s. w. cor.....	.....	46	.....	.....	D.	6
1854	Robert and Fifth, n. w. cor.....	.....	46	.....	.....	D.	6
1855	Minnesota and Fifth, s. e. cor.....	.....	44	.....	.....	D.	6
1856	Minnesota and Sixth, s. e. cor.....	.....	44	.....	.....	D.	6
1857	Marshall and Milton, n. e. cor.....	.....	.....	35	.....	5.	12
1858	Marshall and Chatsworth, n. e. cor.....	.....	.....	39	.....	5.	12
1859	Marshall and Oxford, n. e. cor.....	.....	.....	48	.....	5.	12
1860	Earl and York, s. w. cor.....	.....	.....	57	.....	5.	16
1861	Earl and Sims, s. w. cor.....	.....	.....	50	.....	5.	16
1862	Earl and Case, s. w. cor.....	.....	.....	43	.....	5.	16
1863	Earl and Jenks, s. w. cor.....	.....	.....	40	.....	5.	16
1864	Earl and Lawson, s. w. cor.....	.....	.....	39	.....	5.	16
1865	Earl and Cook, s. w. cor.....	.....	.....	37	.....	5.	16
1866	Cedar and Fifth, n. w. cor.....	.....	42	.....	.....	D.	12
1867	Cedar and Sixth, n. w. cor.....	.....	42	.....	.....	D.	12
1868	Como and Park avenue, n. w. cor.....	.....	.....	50	.....	5.	16
1869	Lytton place and Park avenue, n. w. cor..	.....	.....	63	.....	5.	6
1870	Lytton place and Stellar, n. w. cor.....	.....	.....	62	.....	5.	6
1871	Lytton.. place and Sylvan, n. w. cor.....	.....	.....	61	.....	5.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.	
		Low Service.		High Service.				
		Phalen Lake.	Vadnais Lake.	Reser- voir.	West Side.			
1872	State and Louisa, s. w. cor.			30		S.	16	
1873	State and Elizabeth, s. w. cor.			28		S.	16	
1874	State and Bunker, n. w. cor.			20		S.	16	
1875	Bradley, 200 feet south of Seventh.	40				S.	6	
1876	Dearborn and Gorman, n. e. cor.			19		S.	6	
1877	Summit and Syndicate, n. w. cor.				24	S.	12	
1878	Summit and Hamline, n. w. cor.				21	S.	12	
1879	Summit and Albert, n. e. cor.				23	S.	12	
1880	Syndicate and Grand, n. w. cor.				23	S.	6	
1881	Lincoln and C., M. & St. P. railway.				30	S.	6	
1882	Lincoln and Syndicate, n. w. cor.				28	S.	6	
1883	Lincoln and Hamline, n. e. cor.				24	S.	6	
1884	Wells and Edgerton, n. e. cor.				72	S.	6	
1885	Wells and Greenbrier, n. w. cor.				55	S.	6	
1886	Norton and Como boulevard, n. w. cor.				42	S.	6	
1887	Seventh and Birmingham, n. w. cor.				50	S.	16	
1888	Seventh and Flandrau, n. w. cor.				10	S.	16	
1889	White Bear and Seventh, n. w. cor.				20	S.	12	
1890	White Bear and Harvard, s. w. cor.				22	S.	12	
1891	White Bear and La Crosse.				19	S.	12	
1892	White Bear and Ames. This hydrant was made in St. Paul and placed in service in the year 1892; n. w. cor.				18	S.	12	
1893	Stillwater and Flandrau, s. w. cor.				28	S.	6	
1894	Flandrau and Harvester, n. w. cor.				34	S.	6	
1895	Page and State, n. w. cor.					92	S.	16
1896	Page and Mt. Hope, n. e. cor.					81	S.	6
1897	Page and Harvard, n. w. cor.					79	S.	6
1898	Bunker and Harvard, n. w. cor.					87	S.	6
1899	Bunker and Mt. Hope, n. e. cor.					82	S.	6
1900	Oakdale and Bunker, n. w. cor.					86	S.	6
1901	Oakdale and Page, n. w. cor.					81	S.	6
1902	Morton and Robert, n. w. cor.					84	S.	16
1903	Morton and Livingston, n. w. cor.					75	S.	10
1904	Morton and Gorman, n. w. cor.					74	S.	16
1905	Morton and Goff, n. w. cor.					73	S.	16
1906	Morton and Winslow, n. w. cor.					74	S.	16
1907	Robert and Page, n. w. cor.					86	S.	16
1908	Robert and Tyler, n. w. cor.					85	S.	16
1909	Bidwell and Morton, n. w. cor.					74	S.	16
1910	Stryker and Tyler, n. w. cor.					62	S.	6
1911	Stryker and Page.					68	S.	6
1912	Stryker and Morton, n. w. cor.					76	S.	6
1913	Stryker and Augusta, s. w. cor.					79	S.	6
1914	Hall and Morton, n. w. cor.					74	S.	6
1915	Hall and Augusta, s. w. cor.					77	S.	6
1916	Hall and Elizabeth, s. w. cor.					78	S.	6
1917	Baker and Bidwell, n. w. cor.					77	S.	12
1918	Baker and Bellows, n. w. cor.					75	S.	12
1919	Baker and Waseca, n. w. cor.					69	S.	12
1920	Baker and Chariton, n. w. cor.					63	S.	12
1921	Baker and Manomin, n. w. cor.					50	S.	12
1922	Baker and Smith, n. w. cor.					49	S.	12
1923	Baker and Ottawa, n. w. cor.					46	S.	12
1924	Ohio and Winona, n. w. cor.					32	S.	6
1925	Ohio and Belmont, n. w. cor.					37	S.	6
1926	Ohio and Sidney, n. w. cor.					45	S.	6
1927	Ohio and Page, n. w. cor.					47	S.	6
1928	Ohio and Morton, n. w. cor.					51	S.	6
1929	Ohio and Baker, n. w. cor.					57	S.	6
1930	Ohio and King, n. w. cor.					62	S.	6
1931	Ohio and Stevens, n. w. cor.					66	S.	6
1932	Ohio and George, n. w. cor.					72	S.	6
1933	Ohio and Robie, n. w. cor.					79	S.	6
1934	Ohio and Winifred, s. w. cor.					75	S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
1935	George and Charlton, n. w. cor.				68		6
1936	George and Seminole				71		6
1937	Orleans and Cherokee, s. w. cor.				69		6
1938	Orleans and Robie, n. w. cor.				68		6
1939	Orleans and George, n. w. cor.				65		6
1940	Orleans and Stevens, n. w. cor.				62		6
1941	Orleans and King, n. w. cor.				54		6
1942	Orleans and Baker, n. w. cor.				51		6
1943	Orleans and Morton, n. w. cor.				47		6
1944	Orleans and Page, n. w. cor.				44		6
1945	Manomin and Morton, n. w. cor.				46		12
1946	Manomin and Page, n. w. cor.				43		12
1947	Manomin and Sidney, n. w. cor.				39		12
1948	Manomin and Belmont, n. w. cor.				35		12
1949	Manomin and Winona, n. w. cor.				30		12
1950	Manomin and Annapolis, n. w. cor.				19		12
1951	George and Waseca, n. w. cor.				73		6
1952	George and Manomin, n. w. cor.				65		6
1953	Cherokee and Baker, s. w. cor.				45		6
1954	Cherokee and Morton, n. w. cor.				34		6
1955	Cherokee and Page, n. w. cor.				34		6
1956	Cherokee and Sidney, n. w. cor.				27		6
1957	Cherokee and Belmont, n. w. cor.				23		6
1958	Cherokee and Winona, n. w. cor.				22		6
1959	Cherokee and Wyoming, n. w. cor.				21		6
1960	Cherokee and Annapolis, n. w. cor.				18		6
1961	Sidney and Ottawa, n. w. cor.				32		6
1962	Hazel and Ames			22		S.	12
1963	Hazel, 300 feet north of Ames			18		S.	12
1964	Cherokee and Smith avenue, s. w. cor.				67	S.	6
1965	Cherokee and Ottawa, s. e. cor.				60	S.	6
1966	Cherokee and Stevens, n. w. cor.				51	S.	6
1967	Cherokee and King				47	S.	6
1968	Macalester and Grand, n. w. cor.			28		S.	6
1969	Manomin and Wyoming, n. w. cor.				24	S.	12
1970	Harrison and Lawton, n. e. cor.		39			S.	6
1971	E. Fourth and Cypress, n. w. cor.			42		S.	6
1972	E. Fourth and Earl, n. w. cor.			56		S.	6
1973	Fairview and Capitol place, s. w. cor.			31		S.	6
1974	Minnehaha and Fairview, n. w. cor.			38		S.	12
1975	Minnehaha and Capitol, n. w. cor.			29		S.	12
1976	Tatum and Minnehaha, n. w. cor.			32		S.	6
1977	Tatum and Chelton, s. w. cor.			35		S.	6
1978	Tatum and Chelton, n. w. cor.			36		S.	6
1979	Chelton and Pusey, n. w. cor.			35		S.	6
1980	Chelton and Prior, n. e. cor.			34		S.	6
1981	Dawson and Gotzian, n. w. cor.			49		S.	6
1982	Dawson and Terry, n. w. cor.			65		S.	6
1983	Dawson and Cypress, n. e. cor.			46		S.	6
1984	St. Clair and Cliff, n. w. cor.		38			S.	6
1985	St. Clair and Ann, n. w. cor.		39			S.	6
1986	Fauquier and Greenbrier, n. e. cor.			70		S.	6
1987	Fauquier and Walsh, n. e. cor.			65		S.	6
1988	Fairview, west end of Edmund			38		S.	12
1989	Fairview, west end of Thomas			36		S.	12
1990	Fairview, west end of Lafond			34		S.	12
1991	Fairview, west end of Blair			33		S.	12
1992	Fairview, west end of Van Buren			32		S.	12
1993	Grand and C., M. & St. P. R. R., west end			28		S.	6
1994	Wells and Welde, n. w. cor.			43		S.	6
1995	Wells and Walsh, south side R. Wall			58		S.	4
1996	Wells and Greenbrier, south side R. Wall			65		S.	4
1997	Arlington, 100 feet north of Greenbrier			73		S.	4
1998	James and Warsaw, n. e. cor.		33			S.	6
1999	University and Pelham			46		S.	12

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser-voir.	West Side.		
2000	University and Cromwell, n. e. cor.....	.....	.....	48	.....	S.	12
2001	Jenks and Greenbrier, n. w. cor.....	.....	.....	48	.....	S.	6
2002	Jenks and Walsh, n. w. cor.....	.....	.....	35	.....	S.	6
2003	Jenks and Weide, n. w. cor.....	.....	.....	48	.....	S.	6
2004	Marshall and Moore, n. w. cor.....	.....	.....	45	.....	S.	12
2005	Marshall and Wilder, n. w. cor.....	.....	.....	46	.....	S.	12
2006	Marshall anl Cleveland, n. e. cor.....	.....	.....	47	.....	S.	12
2007	Jessie and Geranium, s. w. cor.....	.....	.....	30	.....	S.	6
2008	Jessie and Rose, s. w. cor.....	.....	.....	34	.....	S.	6
2009	Jessie and Maryland, s. w. cor.....	.....	.....	35	.....	S.	6
2010	Cleveland and Selby, n. w. cor.....	.....	.....	45	.....	S.	12
2011	Cleveland and Laurel, n. e. cor.....	.....	.....	46	.....	S.	12
2012	Maryland and De Soto, n. e. cor.....	.....	.....	55	.....	S.	6
2013	Maryland and Burr, n. e. cor.....	.....	.....	54	.....	S.	6
2014	Maryland and Bradley, n. e. cor.....	.....	.....	45	.....	S.	6
2015	Dayton and Lexington, n. e. cor.....	.....	.....	37	.....	S.	6
2016	Warsaw and Palace, s. w. cor.....	.....	32	.....	.....	S.	6
2017	Dayton and Dunlap, n. e. cor.....	.....	.....	20	.....	S.	6
2018	Dayton and Griggs, n. e. cor.....	.....	.....	28	.....	S.	6
2019	Argyle and Hatch, s. w. cor.....	.....	.....	24	.....	S.	4
2020	McMenemy and Magnolia, n. w. cor.....	.....	.....	51	.....	S.	12
2021	Como boulevard, 350 feet north of Horton.	.....	.....	.....	.....	S.	6
2022	McMenemy and Jenks, n. w. cor.....	.....	.....	61	.....	S.	12
2023	McMenemy and Lawson, n. w. cor.....	.....	.....	59	.....	S.	12
2024	McMenemy and Cook, n. w. cor.....	.....	.....	56	.....	S.	12
2025	Cook, 125 feet east of Mississippi.	.....	.....	76	.....	S.	6
2026	Cook and Arkwright, n. w. cor.....	.....	.....	43	.....	S.	6
2027	Lawson and Arkwright, n. w. cor.....	.....	.....	49	.....	S.	6
2028	Lawson, 125 feet east of Mississippi.	.....	.....	79	.....	S.	6
2029	Cleveland and Ashland.....	.....	.....	51	.....	S.	12
2030	Cleveland and Leslie.....	.....	.....	50	.....	S.	12
2031	Cleveland and Summit, n. w. cor.....	.....	.....	48	.....	S.	12
2032	Cleveland and Summit, s. w. cor.....	.....	.....	44	.....	S.	12
2033	Cleveland and Grand, n. w. cor.....	.....	.....	44	.....	S.	12
2034	Jenks and Arkwright.....	.....	.....	35	.....	S.	6
2035	Magnolia, 125 feet east of Mississippi.	.....	.....	72	.....	S.	6
2036	Magnolia and Woodland, n. w. cor.....	.....	.....	40	.....	S.	6
2037	Magnolia and Arkwright, n. w. cor.....	.....	.....	45	.....	S.	6
2038	Burr and Rose, n. w. cor.....	.....	.....	53	.....	S.	6
2039	Burr and Brainerd, s. w. cor.....	.....	.....	51	.....	S.	6
2040	Poplar and Northern Pacific yards.....	.....	.....	80	.....	S.	6
2041	Poplar and Agate, n. w. cor.....	.....	.....	81	.....	S.	6
2042	Grand and Finn, n. e. cor.....	.....	.....	55	.....	S.	6
2043	Grand and Cretin, n. e. cor.....	.....	.....	58	.....	S.	6
2044	Rondo and Fairview, n. w. cor.....	.....	.....	54	.....	S.	6
2045	South Robert and Curtis, n. w. cor.....	.....	.....	.....	78	S.	12
2046	South Robert and Belvidere, n. w. cor.....	.....	.....	.....	73	S.	12
2047	Belvidere and Riverview, n. w. cor.....	.....	.....	.....	69	S.	6
2048	Belvidere and Oakdale, n. w. cor.....	.....	.....	.....	65	S.	6
2049	Churchill and Hatch, s. w. cor.....	.....	.....	34	.....	S.	4
2050	Churchill and Orchard, s. w. cor.....	.....	.....	33	.....	S.	4
2051	Churchill and Northern Pacific railroad.....	.....	.....	33	.....	S.	4
2052	Bunker and Brown, n. w. cor.....	.....	.....	.....	104	S.	6
2053	Bunker and Woodbury, n. w. cor.....	.....	.....	.....	98	S.	6
2054	Delos and Bidwell, n. w. cor.....	.....	21	.....	.....	S.	6
2055	Delos and Bellows, n. e. cor.....	.....	23	.....	.....	S.	6
2056	Rosabel and Sixth, s. e. cor.....	.....	48	.....	.....	D.	6
2057	Rosabel and Fifth, s. w. cor.....	.....	55	.....	.....	D.	6
2058	Fourth and Rosabel, n. e. cor.....	.....	62	.....	.....	D.	6
2059	St. Peter and Wabasha, s. w. cor.....	.....	.....	55	.....	D.	6
2060	University and Dunlap, n. e. cor.....	.....	.....	40	.....	S.	6
2061	Marshall 300 feet west of Cleveland.....	.....	.....	48	.....	S.	12
2062	Albemarle and A water, n. w. cor.....	.....	.....	69	.....	S.	4
2063	Wayzata and Albemarle, n. e. cor.....	.....	.....	60	.....	S.	6
2064	George and Winslow, n. e. cor.....	.....	.....	.....	91	S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
2065	George and Bidwell, n. e. cor.	..	..	..	92	S.	6
2066	Magnolia and Cypress, n. w. cor.	..	..	35	..	S.	6
2067	Warsaw and Randolph, n. w. cor.	..	34	..	..	S.	6
2068	Bay and Juno, s. w. cor.	..	32	..	..	S.	6
2069	Franklin and Eagle, s. w. cor.	..	59	..	..	S.	4
2070	McLean and Cypress, n. e. cor.	..	..	44	..	S.	6
2071	Jenks and Mendota, n. w. cor.	..	..	48	..	S.	6
2072	Jenks and Forest, n. w. cor.	..	..	47	..	S.	6
2073	Mississippi and Geranium, s. w. cor.	..	24	..	..	S.	6
2074	Prior and Selby, n. w. cor.	..	..	39	..	S.	6
2075	Selby and Ames, n. w. cor.	..	..	35	..	S.	6
2076	Evergreen and Lexington, n. e. cor.	..	..	37	..	S.	6
2077	Churchill and Van Slyke, s. w. cor.	..	..	42	..	S.	6
2078	Churchill and McKenty, n. w. cor.	..	..	25	..	S.	6
2079	Cross and Churchill, n. e. cor.	..	..	40	..	S.	6
2080	Chatsworth and Van Slyke	..	..	41	..	S.	6
2081	Chatsworth and Union	..	..	40	..	S.	6
2082	Chatsworth and McKenty, n. w. cor.	..	..	39	..	S.	6
2083	Argyle and McKenty, n. w. cor.	..	..	37	..	S.	6
2084	Workhouse, n. w. cor.	..	..	34	..	S.	6
2085	Workhouse, s. w. cor.	..	..	34	..	S.	6
2086	Cleveland and Lincoln, n. w. cor.	..	..	45	..	S.	12
2087	Lincoln and Finn, n. e. cor.	..	..	53	..	S.	6
2088	Summit ave and Cambridge, s. w. cor.	..	..	31	..	S.	6
2089	Summit and Baldwin, s. e. cor.	..	..	34	..	S.	6
2090	De Soto and C, St. P., M. & O., s. w. cor.	..	..	74	..	S.	6
2091	Mt. Ida and De Soto, n. w. cor.	..	..	78	..	S.	12
2092	Waverly and John, s. e. cor.	36	..	..	..	S.	6
2093	Somerset and Olive, s. e. cor.	35	..	..	..	S.	6
2094	Lawson and Park avenue, n. w. cor.	..	..	55	..	S.	6
2095	Lawson and Sylvan, n. w. cor.	..	..	43	..	S.	6
2096	Somerset and Pine, s. e. cor.	37	..	..	..	S.	6
2097	Ashland and Oxford, n. e. cor.	..	..	30	..	S.	6
2098	Hardenberg place, 190 feet north of Sylvan	..	..	76	..	S.	4
2099	George and Bidwell, n. w. cor.	..	..	..	89	S.	6
2100	George and Bellows, n. w. cor.	..	..	..	82	S.	6
2101	Juno and Victoria, n. e. cor.	..	29	..	..	S.	6
2102	Juno and Milton, n. e. cor.	..	27	..	..	S.	6
2103	Seventh and St. Peter, n. w. cor.	..	34	..	..	D.	16
2104	Seventh and Sixth, s. w. cor.	..	33	..	..	D.	16
2105	Minnehaha and Aldine, n. e. cor.	..	..	26	..	S.	12
2106	Minnehaha and Wheeler, n. e. cor.	..	..	28	..	S.	12
2107	Juno and Chatsworth, n. s. cor.	..	25	..	..	S.	6
2108	Lawson and Forest, n. w. cor.	..	..	44	..	S.	6
2109	Knapp and Chelmsford, n. w. cor.	..	..	25	..	S.	6
2110	Knapp and Raymond, n. w. cor.	..	..	25	..	S.	6
2111	Bradley, 236 feet north of Maryland	..	..	46	..	S.	6
2112	Oakdale and Page, n. w. cor.	..	..	..	79	S.	6
2113	Oakdale and Curtis, n. w. cor.	..	..	..	75	S.	6
2114	Louisa and Gorman, n. e. cor.	..	14	..	..	S.	6
2115	Louisa and Livingston, n. e. cor.	..	15	..	..	S.	6
2116	Lexington and Sherburne, n. w. cor.	..	..	46	..	S.	16
2117	Charles and Lexington, n. w. cor.	..	..	47	..	S.	6
2118	Concord and Belvidere, n. e. cor.	..	49	..	..	S.	12
2119	Banfil and Duke, n. e. cor.	..	30	..	..	S.	6
2120	Belvidere and Stickney, n. w. cor.	..	44	..	..	S.	6
2121	Belvidere and Waterloo, n. e. cor.	..	29	..	..	S.	6
2122	Belvidere and Hoyt, n. e. cor.	..	19	..	..	S.	6
2123	Belvidere and Andrew, n. e. cor.	..	12	..	..	S.	6
2124	Burgess and Como, n. w. cor.	..	..	50	..	S.	6
2125	Selby and Fairview, n. e. cor.	..	..	27	..	S.	6
2126	Selby and Wheeler, n. w. cor.	..	..	32	..	S.	6
2127	Selby and Herschel, n. w. cor.	..	..	33	..	S.	6
2128	Selby and Aldine, n. w. cor.	..	..	34	..	S.	6
2129	Bradford and Wycliff, s. w. cor.	..	..	44	..	S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE				Single or Double Steamer.	Size of Street M. In.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
2130	Bradford and Endicott, s. w. cor.....			44		S.	6
2131	Iglehart and Wheeler, n. w. cor.....			32		S.	6
2132	St. Peter and Sixth, n. e. cor.....		33			D.	6
2133	Washington and Sixth, n. w. cor.....		33			D.	12
2134	Washington and Fifth, s. e. cor.....		33			D.	12
2135	Washington and Fourth, n. e. cor.....		33			D.	12
2136	Lawson and Cypress, n. w. cor.....			43		S.	6
2137	Cook and Farrar n. w. cor.....			42		S.	6
2138	Wacouta and Eighth, s. s. cor.....	41				D.	12
2139	Atlantic and Stillwater, s. w. cor.....			53		D.	6
2140	Atlantic and C. St. P. M. & O., n. e. cor.....			52		D.	6
2141	Atlantic and C. St. P. M. & O., s. w. cor.....			52		S.	6
2142	Fairmount and Milton, n. e. cor.....			40		S.	6
2143	East Fourth and Terry, n. w. cor.....			66		S.	6
2144	Pacific and Cypress, n. s. cor.....			52		S.	6
2145	Pacific and Heater, n. w. cor.....			55		S.	6
2146	Hague and Dunlap, n. e. cor.....			30		S.	6
2147	Hague and Griggs, n. e. cor.....			24		S.	6
2148	Simpson and Blair, n. w. cor.....			28		S.	6
2149	Simpson and Van Buren, n. w. cor.....			27		S.	6
2150	Ellis and Seal, n. w. cor.....			24		S.	6
2151	Summit and Frey, n. w. cor.....			30		S.	12
2152	Macalester and Lincoln, s. w. cor.....			20		S.	6
2153	Macalester and Princeton, n. w. cor.....			22		S.	6
2154	Princeton, head of Vernon.....			25		S.	6
2155	Princeton and Baldwin, n. e. cor.....			30		S.	6
2156	Cambridge and Amherst, n. w. cor.....			28		S.	6
2157	Lincoln and Cambridge, n. w. cor.....			29		S.	6
2158	Lincoln and Baldwin, n. e. cor.....			30		S.	6
2159	Sixth st., bet. Cedar and Minnesota, s. side		44			D.	8
2160	Sixth st., bet. Minnesota and Robert, n. s.		45			D.	8
2161	Sixth st., bet. Robert and Jackson, s. side.		46			D.	8
2162	Jefferson and Warsaw, n. w. cor.....		32			S.	12
2163	Arbor and Jefferson, n. w. cor.....		31			S.	6
2164	Arbor and Grace, s. w. cor.....		30			S.	6
2165	Sixth and Sibley, s. e. cor.....		47			D.	8
2166	Third and Pleasant, n. e. cor.....			88		S.	6
2167	St. Peter and Ninth, n. w. cor.....		83			D.	6
2168	St. Peter and Exchange, n. w. cor.....		31			D.	6
2169	Blair and Wheeler, n. w. cor.....			27		S.	6
2170	Blair and Aldine, n. w. cor.....			28		S.	6
2171	St. Peter and Tenth, n. w. cor.....		27			D.	6
2172	Wabasha and Tenth, s. w. cor.....		29			D.	6
2173	Pennsylvania and Park, n. w. cor.....			72		S.	4
2174	Exchange and Wabasha, n. e. cor.....		31			D.	6
2175	Jenks and Northern Pacific yard.....			87		S.	6
2176	Jenks and Agate, n. w. cor.....			80		S.	6
2177	Fifth, bet. Rosabel and Wacouta, n. side..		54			D.	12
2178	Fifth, bet. Sibley and Jackson north side..		49			D.	12
2179	Fifth, bet. Jackson and Robert, north side		47			D.	12
2180	Fifth, bet. Robert and Minnesota, n. side..		45			D.	12
2181	Fifth, bet. Minnesota and Cedar, n. side..		45			D.	12
2182	Wacouta, 220 ft. south of Third, w. side..		68			S.	6
2183	Rosabel and Third, s. s. cor.....		64			D.	6
2184	Rosabel, 224 feet south of Third, west side		68			D.	6
2185	Fairview, between Arch and Mt. Airy....			53		S.	6
2186	Wacouta, bet. Fourth and Fifth, west side		55			D.	12
2187	Broadway and Sixth, n. s. cor.....		48			D.	16
2188	Robert, bet. Sixth and Seventh, east side..		45			D.	6
2189	Robert, bet. Fourth and Fifth, west side..		45			D.	6
2190	Jackson, bet. Third and Fourth, east side..		52			D.	12
2191	Grand and Cambridge, n. e. cor.....			30		S.	6
2192	Grand and Baldwin, n. e. cor.....			31		S.	6
2193	Curtis and Mt. Hope, n. e. cor.....				76	S.	6
2194	Curtis and Harvard, n. w. cor.....				74	S.	6

## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadna's Lake.	Reser- voir.	West Side.		
2195	Curtis and Woodbury, n. w. cor.....				74	S.	6
2196	Curtis, 250 feet east of Woodbury, n. side.				75	S.	6
2197	Fourth and St. Peter, s. e. cor.....		32			D.	6
2198	St. Peter, bet. Fourth and Fifth, west side		32			D.	6
2199	St. Peter, bet. Fifth and Sixth, east side..		33			D.	6
2200	Fifth, bet. Wabasha and St. Peter, n. side		33			D.	6
2201	Wabasha, bet. Fifth and Sixth, west side		36			D.	6
2202	Sixth, bet. Wabasha and St. Peter, s. side		36			D.	8
2203	Fifth and Market, 5 ft. east of corner....		35			D.	8
2204	Cedar and Second, 22 ft. west of corner...		39			D.	8
2205	West Third, 65 ft. south of Summit, e. side			59		S.	6
2206	Oakland and Floral, n. w. cor.....			58		S.	4
2207	Summit, 325 feet east of Sixth, n. side....			67		D.	12
2208	Sixth and Summit, s. e. cor.....		37	61		D.	6
2209	Duke and Grace, n. w. cor.....		37			S.	6
2210	Duke and St. Clair, s. w. cor.....		34			S.	6
2211	Robie and Bellows, n. e. cor.....				93	S.	6
2212	Robie and Bidwell, n. w. cor.....				95	S.	6
2213	Louisa and Hall, s. w. cor.....				86	S.	6
2214	Sims and Cypress, n. e. cor.....			54		S.	6
2215	Arcade, 154.5 feet south of Wells, e. side..			63		D.	12
2216	Forest, 180 feet south of Wells, e. side..			62		D.	6
2217	Geranium and Bradley, n. e. cor.....			43		S.	6
2218	Geranium and Burr, n. e. cor.....			55		S.	6
2219	Westminster and Cayuga, n. w. cor.....			83		S.	6
2220	Westminster and York, s. w. cor.....			77		S.	6
2221	Agate and Case, n. w. cor.....			86		S.	6
2222	Bohn's factory, 215 feet east of Arcade, 375 feet south of Wells.....	10				D.	16
2223	Bohn's factory, 208 feet east of Arcade, 380 feet south of Wells.....	10				D.	16
2224	Bohn's factory, 50 feet west of Mendota, 320 feet south of Wells.....	10				D.	16
2225	Marshall and Fry, n. w. cor.....			34		S.	12
2226	Marshall and Pierce, n. w. cor.....			35		S.	12
2227	Marshall and Aldine, n. w. cor.....			36		S.	12
2228	Marshall and Herschel, n. w. cor.....			35		S.	12
2229	Grand and Fairview, n. e. cor.....			42		S.	6
2230	Jessamine and Cypress, n. w. cor.....			36		S.	6
2231	Lawson and Agate, n. w. cor.....			80		S.	6
2232	Oneida and Grace, s. w. cor.....		34			S.	6
2233	Smith avenue and McBoal, s. w. cor.....		37			S.	6
2234	Cook and Agate, n. w. cor.....			75		S.	6
2235	Wells and Walsh, n. e. cor.....			56		S.	6
2236	Ellis and Sidney, n. e. cor.....			40		S.	6
2237	Lombard avenue, 436 feet west of Milton..			51		S.	6
2238	Lombard avenue and Milton, n. w. cor....			59		S.	6
2239	James and Webster, n. w. cor.....		38			S.	6
2240	Mackubin, 20 feet north of alley, between Portland and Summit avenues.....			34		S.	6
2241	Asbury avenue and Blair, n. w. cor.....			41		S.	6
2242	Conway and Earl, n. w. cor.....			48		S.	6
2243	Lawson and Bradley, n. w. cor.....			68		S.	6
2244	Cook, 309 feet east of Agate.....			82		S.	6
2245	Victoria and Hatch, s. w. cor.....			35		S.	12
2246	Vandalla and Charles, n. e. cor.....			45		S.	6
2247	Vandalla, 328 feet north of Charles.....			44		S.	6
2248	Goodrich avenue, 167 feet east of Leach..		45			S.	6
2249	Fuller and Lexington, n. w. cor.....			51		S.	6
2250	Geranium and Mendota, n. w. cor.....			48		S.	6
2251	McLean avenue and Hester, n. w. cor....			54		S.	6
2252	Ohio and Cherokees, s. w. cor.....				95	S.	6
2253	Robie and Winslow avenue, n. e. cor.....		22			S.	6
2254	Winifred and Charlton, n. e. cor.....		15			S.	6



## LIST OF HYDRANTS.—Continued.

No.	LOCATION.	STATIC PRESSURE.				Single or Double Steamer.	Size of Street Main.
		Low Service.		High Service.			
		Phalen Lake.	Vadnais Lake.	Reser- voir.	West Side.		
2255	Sherburne avenue and Dunlap, n. e. cor....	.....	.....	43	.....	S.	6
2256	Taylor avenue and Aldine, n. e. cor.....	.....	.....	30	.....	S.	6
2257	Smith avenue and Morton, n. w. cor.....	.....	.....	.....	44	S.	6
2258	Reaney, near Hamm's railroad tracks....	.....	.....	78	.....	S.	6
2259	Smith avenue and George, n. w. cor.....	.....	.....	.....	62	S.	6
2260	Smith avenue and Stevens, n. w. cor.....	.....	.....	40	55	S.	6
2261	Geranium and Cypress, n. w. cor.....	.....	.....	40	.....	S.	6
2262	Marion and Wayzata, n. w. cor.....	.....	.....	65	.....	S.	6
2263	Marion and Milford, n. w. cor.....	.....	.....	67	.....	S.	6
2264	Marion and Atwater, n. w. cor.....	.....	.....	68	.....	S.	6
2265	Pennsylvania ave., 283 ft. w. of Columbia.	.....	26	.....	.....	S.	6
2266	Rose and Greenbrier, n. e. cor.....	.....	.....	46	.....	S.	6
2267	James and Bay, n. e. cor.....	.....	34	.....	.....	S.	6
2268	Harrison and Goodrich, n. w. cor.....	.....	34	.....	.....	S.	6
Totals.....		123	613	1,437	95		

New hydrants placed during the year 1896 on low service, Lake Vadnais..... 5

New hydrants placed during the year 1896 on high service, reservoir..... 10

New hydrants placed during the year 1896 on high service, West Side..... 4

Total for the year..... 19

NOTE.—All hydrants are known as Matthews' patent.

Twenty-six hydrants have been transferred from low service to high service.

DISTRICTS.	Double Steamer.	Single Steamer.	Total Number of Hydrants in each Dist.
Low service, Lake Phalen.....	16	107	123
Low service, Lake Vadnais.....	119	494	613
High service, reservoir.....	11	1,426	1,437
High service, West Side.....	.....	95	95
Total .....	146	2,122	2,268

The following hydrants are placed on private property. They are of the standard make, and can be used in case of fire: Northwestern Cordage Works, 4; W. A. Wood Harvester Works, 11; Northern Pacific shops, 3; Yoerg's brewery, 1.

TABLE NO. 18.

## LIST OF STREET SPRINKLING HYDRANTS.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.
1	Sixth and Sibley.....	10 feet.
2	Fifth and Wacouta.....	7 feet.
3	Wacouta and Third.....	6 feet.
4	Fort and Third.....	6 feet.
5	Third and Jackson.....	5 feet.
6	Minnesota and Third.....	5 feet.
7	Fifth and Robert.....	6 feet.
8	Robert and Seventh.....	7 feet.
9	Wacouta and Seventh.....	6 feet.
10	Ninth and Cedar.....	7 feet.
11	Eighth and Broadway.....	6 feet.
12	John and Seventh.....	6 feet.
13	Walnut and Seventh.....	5 feet.
14	Kittson and Seventh.....	8 feet.
15	Ninth and St. Peter.....	5 feet.
16	Pine and Tenth.....	9 ft. e., 30 ft. s.
17	Pine and Grove.....	3 feet.
18	Waverly and Westminster.....	5 feet.
19	Leech and Seventh.....	In tunnel.
20	Broadway and Fourth.....	7 feet.
21	Cedar and Seventh.....	8 feet.
22	College and Wabasha.....	8 feet.
23	College and Tenth.....	8 ft. n., 7 ft. e.
24	Pleasant and Third.....	35 ft. s., 7 ft. w.
25	St. Peter and Third.....	In tunnel.
26	Franklin and Fourth.....	In tunnel.
27	Goodrich and Seventh.....	16 feet.
28	Eleventh and Robert.....	4 feet.
29	Mt. Airy and Mississippi.....	6 feet.
30	Burr and Collins.....	11 feet.
31	Bradley and Woodward.....	7 feet.
32	Martin and Western.....	8 feet.
33	St. Albans and Portland.....	9 feet.
34	Portland and Summit.....	31 feet.
35	Laurel and Farrington.....	6 feet.
36	St. Clair and Seventh.....	10½ feet.
37	Pleasant and Oakland.....	31 ft. s., 32 ft. e.
38	Mackubin and Selby.....	28 feet.
39	Summit and Nelson.....	10 feet.
40	Gaultier, 110 feet north of Lafond.....	10 feet.
41	Dale and Marshall.....	8 feet.
42	Dale and Ashland.....	27 feet.
43	Dale and Grand.....	10 feet.
44	Marshall and Western.....	3 feet.
45	Rondo and Rice.....	9 feet.
46	Central and Wabasha.....	7½ feet.
47	Mackubin and University.....	8 feet.
48	University and Rice.....	8 feet.
49	Bates and Seventh.....	6 feet.
50	Hudson and Maria.....	7 feet.
51	Mendota and Fauquier.....	7 feet.
52	Onelda and Seventh.....	8 feet.
53	Third and Bates.....	8 feet.
54	Fifth and Maria.....	8 feet.
55	Chestnut and Franklin.....	8½ feet.
56	Twelfth and Jackson.....	35 feet.
57	Wacouta and Tenth.....	5 feet.
58	Arundel and Holly.....	29 ft. s., 6 ft. e.
59	Sherman and Smith.....	10 feet.
60	Aurora and Cedar.....	48 ft. e., 7 ft. s.
61	Sixth and Wabasha.....	In tunnel.
62	Eichenwald and Seventh.....	9 feet.
63	Sinnen and Seventh.....	9 feet.
64	Reaney and Seventh.....	8 feet.

## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.
65	Earl and Seventh.....	6 feet.
66	Locust and Ninth.....	7 feet.
67	Walnut and Summit.....	52 feet.
68	Ninth and Fort.....	8 feet.
69	Grove and Canada.....	5 feet.
70	Mendota and Seventh.....	9 feet.
71	Jackson and Fourteenth.....	9 feet.
72	John and Fourth.....	6 feet.
73	Maple and Conway.....	8 feet.
74	Farrington and Carroll.....	20 feet.
75	Topping and Como.....	.....
76	Viola and Grant.....	26 feet.
77	Capitol and Western.....	.....
78	Capitol and Mississppi.....	6 feet.
79	Payne and Minnehaha.....	10 feet.
80	Fairfield and South Wabasha.....	8½ feet.
81	Audubon and Seventh.....	8 feet.
82	Rice and Como.....	8 feet.
83	Rice and Great Northern Ry.....	7 feet.
84	Williams and Pine.....	22 feet.
85	Olmsted and Olive.....	33 feet.
86	Neill and Fifth.....	12 ft. w., 36 ft. s.
87	Valley and Canada.....	7½ feet.
88	Warren and Valley.....	4 ft. e., 32 ft. w.
89	Gaultier and University.....	7 ft. e., 34 ft. s.
90	Virginia and University.....	3 ft. e., 33 ft. s.
91	Farrington and Nelson.....	26 feet west.
92	Oakland and Floral.....	6 feet.
93	Mackubin and Iglehart.....	8 feet.
94	Capitol and Elk.....	6 feet.
95	Summit and Cedar.....	35 feet.
96	Iglehart and St. Peter.....	28 feet.
97	Ninth and Jackson.....	29 feet north.
98	Sherman and Exchange.....	7 feet.
99	Summit Place and Iglehart.....	22 feet.
100	Summit Place and Martin.....	28 feet.
101	Jay and Fuller.....	8 feet.
102	Dale and University.....	8 feet.
103	St. Albans and Hague.....	7 feet.
104	Hoffman and Sixth.....	8 feet.
105	Hoffman and Cherry.....	10 feet.
106	River and Hoffman.....	10 feet.
107	University and Snelling.....	31 feet.
108	Carroll and Dale.....	5 feet.
109	St. Anthony and St. Albans.....	34 feet.
110	Dale and Selby.....	9 feet.
111	Farrington and Sherburne.....	7 feet.
112	Mackubin and Fuller.....	5 feet.
113	Mackubin and St. Anthony.....	9 feet.
114	Harrison and Garfield.....	10 feet.
115	Charles and Western.....	10 feet.
116	Marion and Charles.....	8 feet.
117	Granite and Mississippi.....	9 feet.
118	Sixth and Broadway.....	7 feet.
119	Osceola and Pleasant.....	3 feet.
120	Bedford and Decatur.....	30 feet.
121	Burr and Hopkins.....	6 feet.
122	Maple and Hudson.....	7 feet.
123	Goodhue and Richmond.....	32 feet.
124	Duke and Seventh.....	7 feet.
125	Earl and Minnehaha.....	7 feet.
126	Arcade and Reaney.....	7 feet.
127	Otsego and Lafayette.....	6 feet.
128	Cedar and Fifth.....	6 feet.
129	Grotto and Dayton.....	6 feet.
130	Grove and Monroe Place.....	5 feet.
131	Fauquier and Welde.....	9 feet.

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## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.
132	Arundel and Rondo.....	9 feet.
133	Arcade and York.....	7 feet.
134	Broadway and Thirteenth.....	6 feet.
135	Robert and University.....	10 feet.
136	Como and Elfelt.....	34 ft. w., 13 ft. n.
137	Congress and Robert.....	8 feet.
138	Lee and Ray.....	9 feet.
139	Fillmore and Robert.....	7 feet.
140	Grotto and Grand.....	6 feet.
141	Robert and Wood.....	9 feet.
142	Anita and Concord.....	7 feet.
143	Robie and Concord.....	37 feet.
144	Beaney and Greenbrier.....	8 feet.
145	Victoria and Summit.....	43 feet south.
146	Wabasha, south of Channel.....	8 feet.
147	Isabel and South Wabasha.....	6 feet.
148	Chicago and Robert.....	8 feet.
149	Sherburne and Park.....	3 feet.
150	Virginia and Rondo.....	7 feet.
151	Front and Dale.....	5 feet.
152	Lafond and Western.....	8 feet.
153	Front and Rice.....	6 feet.
154	Kent and Laurel.....	4 feet.
155	Grotto and Holly.....	28 feet.
156	Western and Goodrich.....	8 feet.
157	Cook and Payne.....	7 feet.
158	York and Payne.....	6 feet.
159	University and Victoria.....	18½ feet.
160	University and Lexington.....	28 feet.
161	Third and John.....	10 feet.
162	Tuscarora and Seventh.....	7 feet.
163	Elfelt and Edmund.....	8 feet.
164	Mackubin and Edmund.....	9 feet.
165	Dale and Martin.....	8 feet.
166	Whitall and Burr.....	31 feet.
167	Mississippi and Case.....	9 feet.
168	Mississippi and Jessamine.....	7 feet.
169	University and Hamline.....	28 feet.
170	Taylor and Snelling.....	0 feet.
171	Van Buren and Snelling.....	7 feet.
172	Prior and Oakley.....	31 feet.
173	St. Anthony and Terrace Park Avenue.....	30 feet.
174	Iglehart and Prior.....	3 feet.
175	Jackson and Arch.....	30 feet.
176	Grotto and Carroll.....	9 feet.
177	Franklin and Sixth.....	4 feet.
178	Duluth and Seventh.....	8 feet.
179	Cypress and Euclid.....	8 feet.
180	State and Tennessee.....	31 ft. s., 12 ft. e.
181	St. Albans and Fairmount.....	7 feet.
182	Raymond and Hampden Park.....	14 feet.
183	Raymond and University.....	7 feet.
184	University and Pillsbury.....	21 feet.
185	Raymond and Gordon.....	35 feet.
186	Lexington and Van Slyke.....	35 feet.
187	Fairview and University.....	11 feet.
188	Chatsworth and University.....	6 feet.
189	Grotto and Sherburne.....	7 feet.
190	Whitall and Edgerton.....	30 feet.
191	Edgerton and Jenks.....	31 feet.
192	Snelling and Summit.....	4 feet.
193	Indiana and Hyde.....	7 feet.
194	Dale and Charles.....	4 feet.
195	Mt. Hope and Prescott.....	75 ft. n., 7 ft. w.
196	Geranium and Edgerton.....	33 feet.
197	Jessamine and Greenbrier.....	33 feet.
198	Case and Burr.....	30 feet.



## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.
199	Victoria and Goodrich.....	8 feet.
200	Grotto and Goodrich.....	39 ft. s., 9 ft. w.
201	Dale and Goodrich.....	32 feet.
202	Cliff and Goodhue.....	38 feet.
203	Midway and Woodbury.....	23 feet.
204	Concord and Andrew.....	8 feet.
205	Greenbrier and Case.....	6 feet.
206	York and De Soto.....	31 feet.
207	Westminster and Lookout Place.....	10 feet.
208	Mound and Hastings.....	6 feet.
209	Carroll and Arundel.....	7 feet.
210	Daly and James.....	10 feet.
211	Minnehaha and Hope.....	30 feet.
212	Randolph and Fulton.....	8 feet.
213	McBoal and Smith avenue.....	8 feet.
214	Congress and State.....	28 feet.
215	Milford and Rice.....	22 feet.
216	Sycamore and Jackson.....	26 ft. s., 6 ft. e.
217	Minnehaha and Dale.....	36 feet.
218	Fourth and St. Paul & Duluth Ry.....	7 feet.
219	Forest and York.....	7 feet.
220	Sycamore and Park.....	32 feet.
221	Lafond and Kent.....	6 feet.
222	Erie and St. Clair.....	8 feet.
223	Eagle and Washington.....	6 feet.
224	Tuscarora and Stewart.....	24 feet.
225	Victoria, between Selby and Hague.....	6 feet.
226	Bellows and Winifred.....	7 feet.
227	Front, 476 feet east of Grotto.....	7 feet.
228	Oxford and Summit.....	52 ft. s., 9 ft. w.
229	Summit and Griggs.....	120 feet.
230	Concord and Curtice.....	7 feet.
231	George and Hall.....	9 feet.
232	Dale and Atwater.....	7 feet.
233	Summit and Albert.....	40 feet.
234	Fisk and Laurel.....	38 ft. s., 8 ft. w.
235	Mound and Clermont.....	8 feet.
236	Fairview and Marshall.....	46 ft. s., 8 ft. e.
237	Laura and Rondo.....	57 ft. n., 9 ft. e.
238	Cleveland and Marshall.....	6 feet.
239	Raymond and Kendrick.....	9 feet.
240	Churchill and Front.....	3 feet.
241	Cross and Van Slyke.....	7 feet.
242	Victoria and Front.....	8 feet.
243	Avon and Osceola.....	9 ft. e., 36 ft. s.
244	Avon and St. Anthony.....	6 feet.
245	Wilder and Rondo.....	36 feet.
246	Bunker and Oakdale.....	25 feet.
247	Bancroft and Winifred.....	8 feet.
248	Concord and Page.....	8 feet.
249	Columbia and Glencoe.....	8 feet.
250	Cypress and Hastings.....	6 feet.
251	Westminster and N. P. Ry. Co.....	7 feet.
252	Louis and Rondo.....	34 feet.
253	Fisk and Iglehart.....	7 feet.
254	Chatsworth and Union.....	36 feet.
255	Indiana and Custer.....	7 feet.
256	Feronia and Lynnhurst.....	5 feet.
257	Clinton and Delos.....	5 feet.
258	University and Cromwell.....	26 feet.
259	University and La Salle.....	9 ft. s., 12 ft. e.
260	University and Aldine.....	8 ft. s., 9 ft. w.
261	University and Pascal.....	8 ft. s., 11 ft. w.
262	University and Griggs.....	8 ft. s., 10 ft. w.
263	St. Albans and Pleasant.....	7 feet.
264	Pleasant and Goodrich.....	9 feet east.
265	Pleasant and Western.....	25 feet.

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## LIST OF STREET SPRINKLING HYDRANTS.—Continued.

No.	LOCATION.	MEASUREMENT OF VALVE FROM HYDRANT.
266	Jessamine and Rice.....	8 feet.
267	Indiana and Rice.....	8 feet.
268	Earl and Cook.....	7 feet.
269	Earl and Case.....	6 feet.
270	Milton and Grand.....	45 ft. s., 9 ft. w.
271	Maple and Fifth.....	8 feet.
272	Park and Atwater.....	37 ft. s., 8 ft. e.
273	Park and Litchfield.....	37 ft. s., 6 ft. e.
274	Arundel and Thomas.....	7 feet.
275	Avon and Lincoln.....	4 ft. s., 7 ft. e.
276	Arundel and Aurora.....	6 ft. w., 6 ft. e.
277	St. Albans, 20 feet north of alley between Edmund and Thomas.	178 ft. s., 5 ft. e.
278	St. Albans and Fuller.....	35 ft. s., 7 ft. e.
279	Maria and North.....	12 feet.
280	Hall and Winifred.....	11 feet.
281	Thomas and Farrington.....	7 feet.
282	Margaret and Cable.....	20 feet.
283	Mendota and Forest.....	9 feet.
284	Cherokee and Smith.....	28½ feet.
285	Cherokee and Stevens.....	8 feet.
286	Cherokee and Page.....	8 feet.
287	Cherokee and Winona.....	31 feet.
288	Mt. Airy and Linden.....	7½ feet.
289	Minnehaha and De Soto.....	6½ feet.
290	Winifred and Andrew.....	8 feet.
291	Stryker and Isabel.....	8 feet.
292	Milton and Iglehart.....	43 ft. s., 7 ft. e.
293	Front, west of Grotto.....	8 feet.
294	Chatsworth and Front.....	37 ft. s., 9 ft. e.

Number placed this year..... 3

Total placed to date..... 294

TABLE NO. 19

## INVENTORY OF STOCK.

## PIPES AND SPECIALS.

251 feet 36-inch pipe (cast iron).	2 6x4-inch sleeves and gates, Smith patent.
37 feet 30-inch pipe (cast iron).	2 6x2-inch sleeves and gates, Smith patent.
305 feet 24-inch pipe (cast iron).	1 30-inch open sleeve.
245 feet 20-inch pipe (cast iron).	1 24-inch open sleeve.
624 feet 16-inch pipe (cast iron).	1 20-inch open sleeve.
15 feet 14-inch pipe (cast iron).	2 16-inch open sleeves.
767 feet 12-inch pipe (cast iron).	1 12-inch open sleeve.
45 feet 10-inch pipe (cast iron).	2 8-inch open sleeves.
465 feet 8-inch pipe (cast iron).	1 6-inch open sleeve.
1,124 feet 6-inch pipe (cast iron).	7 4-inch open sleeves.
572 feet 4-inch pipe (cast iron).	1 6x6-inch open sleeve.
129 feet 4-inch pipe (cast iron), old.	30 iron washers for open sleeves.
7 feet 3-inch pipe (cast iron).	2 36-inch plugs.
129 feet 4-inch pipe (cast iron), old.	4 24-inch plugs.
50 feet 8-inch pipe (wr't iron), old.	5 20-inch plugs.
8 feet 6-inch pipe (wr't iron), old.	3 16-inch plugs.
5 feet 5-inch pipe (wr't iron), old.	4 12-inch plugs.
12 feet 4½-inch pipe (wr't iron), old.	9 8-inch plugs.
49 feet 4-inch pipe (wr't iron), old.	27 6-inch plugs.
10 feet 3½-inch pipe (wr't iron), old.	33 4-inch plugs.
6 feet 3-inch pipe (wr't iron), old.	1 24x16-inch 3-way branch.
17 feet 2½-inch pipe (galv'nized), old.	2 24x12-inch 4-way branches.
100 feet 2-inch pipe (galv'nized), old.	1 24x 6-inch 4-way branch.
136 feet 1½-inch pipe (galv'nized), old.	1 24x 4-inch 4-way branch.
75 feet ¾-inch pipe (galv'nized), old.	1 16x16-inch 4-way branch.
1 30-inch 1-16 bend.	1 16x12-inch 4-way branch.
4 24-inch 1-16 bend.	1 16x12-inch 3-way branch.
2 24-inch ¼-bend.	1 16x 6-inch 3-way branch.
1 20-inch ¼-bend.	2 16x 4-inch 3-way branches.
1 20-inch ¼-bend.	1 16x 3-inch 3-way branch.
1 16-inch ¼-bend.	2 12x12-inch 4-way branches.
2 16-inch ¼-bend.	1 12x12-inch 3-way branch.
1 12-inch ¼-bend.	1 12x 8-inch 4-way branch.
1 12-inch ¼-bend.	1 12x 6-inch 4-way branch.
2 8-inch ¼-bend.	2 12x 4-inch 4-way branches.
4 8-inch ¼-bend.	3 12x 4-inch 3-way branches.
1 6-inch ¼-bend, with base.	4 8x 6-inch 4-way branches.
4 4-inch ¼-bends, with base.	2 8x 6-inch 3-way branches.
5 4-inch ¼-bends.	1 8x 6-inch 3-way branch.
12 4-inch ¼-bends.	9 6x 6-inch 3-way branches.
3 36-inch sleeves.	5 6x 6-inch 3-way branches.
2 24-inch sleeves.	14 6x 4-inch 4-way branches.
4 20-inch sleeves.	1 6x 4-inch 3-way branch.
5 16-inch sleeves.	6 6x 3-inch 3-way branches.
4 12-inch sleeves.	14 4x 4-inch 4-way branches.
9 8-inch sleeves.	24 4x 4-inch 3-way branches.
21 6-inch sleeves.	2 4x 3-inch 3-way branches.
18 4-inch sleeves.	1 30x36x24-inch Y.
1 16x4-inch sleeve and gate, Smith patent.	2 24x20x20-inch Y's.
1 12x4-inch sleeve and gate, Smith patent.	1 20x20x20-inch Y.
1 12x6-inch sleeve and gate, Smith patent.	1 12x12x12-inch Y.
2 8x6-inch sleeves and gates, Smith patent.	1 24x16-inch reducer.
2 8x4-inch sleeves and gates, Smith patent.	1 20x12-inch reducer.
7 6x6-inch sleeves and gates, Smith patent.	2 16x12-inch reducers.
	8 12x 6-inch reducers.
	1 8x 6-inch reducer.
	2 6x 4-inch reducers.

HYDRANTS.

- |   |  |
|---|--|
| 9 Double steamer hydrants, complete.      | 2 Single steamer hydrants, without casing.             |
| 6 Single steamer hydrants, complete.      | 6 Sprinkling standpipe casings.                        |
| 1 Double steamer hydrant, without casing. | 6 Sprinkling standpipe casings, with crane attachment. |

GATES.

- |                             |                              |
|-----------------------------|------------------------------|
| 1 20-inch Gahvin gate.      | 12 4-inch Coffin gates.      |
| 1 16-inch Coffin gate.      | 1 4-inch B. & M. gate, old.  |
| 2 12-inch Coffin gates.     | 5 4-inch Ludhow gates, old.  |
| 5 8-inch Coffin gates.      | 1 8-inch B. & M. gate, old.  |
| 16 6-inch Coffin gates.     | 1 3-inch R. D. W. gate, old. |
| 1 6-inch B. & M. gate, old. | 8 3-inch Gahvin gates.       |

FITTINGS TO HYDRANTS AND STANDPIPES.

- |   |   |
|---|---|
| 2 D. S. hydrant casings.                            | 1 S. S. hydrant casing.                               |
| 2 hydrant nozzle reducers.                          | 12 stuffing boxes for sprinkling attachment.          |
| 5 hydrant caps for gauges.                          | 11 2-inch top valves for standpipes.                  |
| 18 hydrant brass top nuts.                          | 8 2-inch top valves for standpipes, old.              |
| 7 tops for D. S. hydrants.                          | 3 2-inch 45 deg. elbows.                              |
| 12 tops for S. S. hydrants.                         | 11 2-inch 90 deg. elbows, straight.                   |
| 22 large caps for hydrants.                         | 10 2-inch 90 deg. elbows, plain.                      |
| 22 small caps for hydrants.                         | 53 pieces 5 feet long 2 1/4-inch hose for standpipes. |
| 1 set standard samples for hydrants.                | 18 hydrant wrenches.                                  |
| 46 rubber washers for D. S. hydrants.               | 1 spanner.  |
| 33 rubber washers for S. S. hydrants.               | 8 socket wrenches for repairs.                        |
| 16 6-inch bases for hydrants.                       | 2 seat wrenches for repairs.                          |
| 9 4-inch bases for hydrants.                        | 5 Coe's wrenches.                                     |
| 5 D. S. hydrant rods.                               | 3 S. wrenches.  |
| 15 S. S. hydrant rods.                              | 2 wrenches for standpipes.                            |
| 10 stuffing boxes for D. S. hydrants.               | 1 pair connectors.                                    |
| 18 stuffing boxes for S. S. hydrants.               | 1 pair plyers.  |
| 2 brass ring valves for D. S. hydrants.             | 1 1/2-inch suction drip pump.                         |
| 11 brass ring valves for S. S. hydrants.            | 1 No. 5 chain tong.                                   |
| 2 brass seats for D. S. hydrants.                   | 2 sets of light tackle blocks with 3/4-inch rope.     |
| 11 brass seats for S. S. hydrants.                  | 2 ratchets.   |
| 11 globe valves for D. S. hydrants.                 | 1 chain 6 feet long.                                  |
| 24 globe valves for S. S. hydrants.                 | 2 boilers for steaming out frozen hydrants.           |
| 8 brass ring valve nuts (for fire hydrants.)        | 1 piece 3/4-inch hose for steaming, 16 feet long.     |
| 7 globe valve nuts (for fire hydrants.)             | 16 caps for standpipe casings.                        |
| 11 revolving nuts (for fire hydrants).              | 2 14-inch flat files.                                 |
| 6 5-inch extra brass nozzles.                       | 2 12-inch round files.                                |
| 17 3-inch extra brass nozzles.                      | 2 cold chisels.                                       |
| 2 valve rods, 7 feet long.                          | 2 cape chisels.                                       |
| 4 valve rods 17 feet long.                          | 1 box bolts.  |
| 2 2-inch pipe drills.                               | 10 side pieces to hydrant drop boxes.                 |
| 2 2-inch pipe taps.                                 | 22 top pieces to hydrant drop boxes.                  |
| 2 2-inch rimmers.                                   | 12 extra top nuts.                                    |
| 2 rimmer handles.                                   | 2 pair 2-inch hose couplings, old.                    |
| 7 2-inch valves.                                    | 2 wooden patterns for ring valves.                    |
| 15 2-inch stop and waste valves with wheels.        | 3 extra brass rings for hydrant bases.                |
| 22 2-inch stop and waste valves with stopcock tops. | 12 extra brass nuts for hydrant stuffing boxes.       |
| 23 Holly hydrant rods.                              |   |
| 1 hydrant drip box.                                 |   |
| 9 extra bases for standpipe casings.                |   |



## FITTINGS TO GATES AND GATE BOXES.

3 2-inch brass Ls for air vents.	2 domes for 4-inch B. & M. gate.
5 spindles for 4-inch B. & M. gates.	1 lot of small duplicates for gate valves.
2 spindles for 6-inch B. & M. gates.	1 pattern divider for 16-inch R. D. W. gate.
11 spindles for 16-inch R. D. W.	4 spindles for 6-inch Ludlow gate.
2 spindles for 20-inch R. D. W.	1 spindle for 12-inch Ludlow gate.
1 spindle for 24-inch R. D. W. gate.	1 gate wrench 11½ feet long.
1 spindle for 16-inch Galvin gate.	5 gate wrenches 8 feet long.
8 spindles for 4-inch Ludlow gate.	2 gate wrenches 6 feet long.
10 gate boxes for 6-in. to 12-in. gates.	2 always-ready wrenches, No. 2½ and No. 3.
10 gate boxes for 4-inch gates.	12 extra bases for 12-inch gate boxes.
19 extra bases for 6-inch gate boxes.	6 extra short gate boxes without bases.
14 extra bases for 4-inch gate boxes.	1 extra top piece for gate box.
3 middle stems for gate boxes.	1 3-inch iron valve, old.
23 covers for gate boxes, flat, for paved streets.	
105 covers for gate boxes, rounded for dirt streets.	
1 dome and face for 16-inch Ludlow gate.	

## LUMBER.

## AT YARD.

75 pieces of sheeting, 8 feet long.	1 piece 2-in.x8-in., 22 feet long.
5 pieces 4-in.x4-in., 12 feet long.	

## AT McCARRON STATION.

2 pieces 3-in.x12-in., 20 feet long.	1 piece 10-in.x12-in., 21 feet long.
1 piece 3-in.x12-in., 14 feet long.	2,530 feet board measure, 10x10, averaging 20 feet in length.
4 pieces 2-in.x8-in., 12 feet long.	

## AT VADNAIS LAKE STATION.

4 pieces 1-in.x24-in., 16 feet long.	30 pieces sheeting, ¾-in.x2½-in., 10 feet long.
4 pieces 1-in.x24-in., 12 feet long.	73 pieces tamarack braces, 4 feet long.
3,656 feet board measure, 2-in.x8-in., averaging 6 feet in length.	31 pieces flooring ½-in.x3½-in., 12 feet long.
5 piles 30 feet long.	18 pieces flooring ½-in.x2½-in., 16 feet long.
1 pile 12 feet long.	

## AT PLEASANT LAKE.

10,270 feet, board measure, miscellaneous lumber.

## AT BALDWIN LAKE STATION.

2 pieces 3-in.x12-in., 20 feet long.	2 pieces piling, 26 feet long.
1 piece 3-in.x12-in., 10 feet long.	40 pieces cedar fence posts.

## AT CENTERVILLE LAKE STATION.

23 pieces 3-in.x12-in., 12 feet long.	2 pieces 4-in.x8-in., 16 feet long.
28 pieces 3-in.x12-in., 6 feet long.	40 pieces 4-in.x6-in., 14 feet long.
48 pieces 2-in.x8-in., 16 feet long.	19 pieces 4-in.x8-in., 10 feet long.
7 pieces 2-in.x6-in., 16 feet long.	20 pieces cedar posts, 14 feet long.



## MISCELLANEOUS OTHER MATERIAL.

## AT OFFICE YARD.

6 manhole covers.	1 10-inch vitrified pipe.
34 cloth bags Austin cement.	1 6-inch vitrified wye.
29 paper sacks Mankato cement.	2 4-inch cast iron soil pipes.
$\frac{3}{4}$ barrel Portland cement.	80 lbs. $\frac{3}{4}$ -inch barbed wire.
15 heavy iron washers.	290 feet $\frac{3}{4}$ -inch wire rope, old.
125 bricks.	687 lbs. pig lead.
1 2 $\frac{1}{2}$ -inch wrought iron pipe, 8 feet long.	800 lbs. scrap lead.
160 lbs. yarn.	180 lbs. old solder.
1 pail plumbago grease.	117 lbs. tin.
3 lbs. dry plumbago.	777 lbs. old brass.
15 lbs. Italian hemp packing.	80 lbs. 60-penny nails.
$\frac{1}{2}$ barrel common salt.	100 lbs. 50-penny nails.
$\frac{1}{2}$ barrel rock salt.	240 lbs. 20-penny nails.
$\frac{3}{4}$ barrel Ebonite black paint.	255 lbs. 10-penny nails.
8 sidewalk cement tiles.	290 lbs. 8-penny nails.
	65 lbs. 8-penny finishing nails.

## AT MIDWAY STATION.

200 lbs. lead.	25 lbs. hemp packing.
8 sacks cement.	

## AT McCARRON STATION.

1,500 old bricks.	5 old stone steps.
1,100 pressed bricks.	33 pieces 36-inch sewer pipe.

## AT VADNAIS LAKE STATION.

2,280 pressed bricks.	220 lbs. $\frac{3}{4}$ -inch rod iron.
11,000 sewer bricks.	$\frac{1}{4}$ barrel mineral paint.

## AT BALDWIN LAKE STATION.

1,000 old bricks.	3 lbs. spikes.
-------------------	----------------

## AT CENTERVILLE LAKE STATION

1,600 bricks.	6 granite monuments.
300 drain tiles, 1 foot long.	1 keg spikes.
15 pieces 6-inch sewer pipe.	4 sacks Mankato cement.
6 pieces 4-inch sewer pipe.	

## OFFICE YARD.

## STABLE AND SHOP.

4 horses.	1 sample 42-inch wooden pipe.
2 light trucks.	1 8-inch rubber belt 40 feet long.
2 buggies.	2 tape lines.
2 light bob sleighs.	3 spirit levels.
2 cutters.	1 work bench with 2 vices.
4 sets single harness.	1 anvil.
3 horse blankets.	2 log hooks.
23 pairs bedding blankets.	6 drag forks.
4 robes.	1 peavy.
2 manure forks.	3 pairs of grab tongs.
Quantity feed for horses.	1 pair of ice tongs.
2 farmers' kettles.	1 $\frac{3}{4}$ -inch hose for washing buggies.

- 2 sand screens.
- 1 box wood stove.
- 19 pairs rubber boots, long.
- 3 pairs rubber boots, short.
- 19 tubular lanterns.
- 7 lamp globes, extra.
- 2 tents.
- 1 grindstone.
- 5 wheelbarrows.
- 4 brooms.
- 1 steel broom.
- 1 writing desk.
- 2 1-gallon cans.
- 2 5-gallon cans.
- 2 pairs window sash.
- 1 beam scale.
- 2 platform scales, Fairbanks'.
- 1 spade.
- 1 plow with knife.
- 1 well measure windlass.
- 7 wire cable couplings.
- 20 right of way signs.
- 1 bowl for water closet.
- 1 wash basin with 3 marble slabs.
- 12 sash weights.
- 1 handsaw.
- 1 cross-cut saw.
- 1 garden rake.
- 2 grub hoes.
- 18 jack screws.
- 1 drag rake.
- 1 1-inch auger.
- 3 branding star-aps.
- 3 2½-inch hose.
- 1 lot of old rope, from ½-inch to 1¼-inch.
- 1 steam gauge.
- 1 60-gallon oil tank.
- 1 mason's trowel.
- 1 whitewash brush.
- 1 saw-set and file.
- 1 scraper with 2-inch pipe handle.

## PIPE-LAYING.

- 41 picks without handles.
- 6 sledge hammers.
- 1 striking hammer.
- 12 mauls, complete.
- 4 sledge handles.
- 2 4-legged derricks.
- 2 3-legged derricks.
- 4 pipe-laying chains.
- 4 turned poles for derrick.
- 1 2-legged derrick for tunnel use.
- 2 2-wheeled pipe trucks with one extra wheel.
- 19 cold chisels.
- 3 caulking set tongs.
- 4 caulking hammers.
- 20 diamond points.
- 3 iron dirt rammers.
- 3 tamping bars.
- 3 pipe tamping rammers.
- 15 pairs cement pipe molds.
- 10 lbs. small rivets to cement mains.
- 13 sand rock picks.
- 1 Smith patent tapping machine for 2 to 6-inch.
- 3 plug and feather drills.
- 1 Edison diaphragm pump with extra handle.
- 2 Bagnall & Land diaphragm pumps with four duplicate pieces.
- 2 3-inch suction hose, 16 feet long.
- 1 rubber roll for 36-inch pipe.
- 1 long handle axe.
- 19 shovels.
- 2 3-inch sheeting caps.
- 2 2-inch sheeting caps.
- 2 hose clamps.
- 4 wheelbarrows for tunnel use.
- 7 dirt scrapers.
- 2 puddling bars and wrench.
- 5 crowbars.
- 1 crowfoot.
- 4 rock gads.
- 10 rock drills.
- 5 steel wedges.
- 3 hoisting buckets.
- 3 iron bands with screw bolts.
- 1 pipe cutter for 4 to 8-inch.
- 1 pipe cutter for 10 to 16-inch.
- 12 cutting chisels.
- 12 cape chisels.
- 8 caulking sets.
- 11 yarning tools.
- 1 3-inch suction hose, 8½ feet long.
- 1 3-inch suction hose, 5 feet long.
- 3 flanges for 4-inch wrought pipe.
- 9 double tackle blocks.
- 8 single tackle blocks.
- 1 mortar hoe.
- 1 No. 3 pipe tong.
- 3 pairs 2-inch extension pipe tongs.
- 1 pair 2-inch extension pipe tongs.
- 2 pairs 1-inch pipe tongs.
- 2 pairs 1½-inch pipe tongs.
- 5 lead pots.
- 5 furnaces.
- 5 lead ladles.
- 1 lead pot on wheels with furnace.
- 13 pipe stirrups.
- 1 suction strainer to pump.
- 5 buckets.
- 2 bolt augers.
- 1 tool box.
- 4 roller journals.
- 1 6-inch suction hose.
- 1 set sounding rods.

## SERVICES.

672 pounds 2-inch lead pipe.	200 feet connecting wire.
269 pounds 1½-inch lead pipe.	2 coils of fuse.
245 pounds 1¼-inch lead pipe, old.	¼ keg blasting powder.
290 pounds 1-inch lead pipe.	25 dynamite caps.
664 pounds ¾-inch lead pipe.	25 pieces blasting timbers.
553 pounds ½-inch lead pipe.	9 blasting chains.
2 pipes with faucets, 5 feet long.	1 solder iron.
2 Fuller faucets.	2 solder pots.
3 1½-inch stop and waste valves, with wheels.	3 smaller solder molds.
3 1¼-inch stop and waste valves, with wheels.	2 gasoline furnaces.
11 1-inch stop and waste valves, Dwyer patent.	1 hand force pump, old.
85 ¾-inch stop and waste valves, B. & M.	1 1-inch force pump.
60 ½-inch stop and waste valves, Dwyer patent.	49 feet 1-inch hose.
1 2-inch check valve.	65 feet ¾-inch hose.
11 1-inch corporation cocks.	1 pipe cutting machine for ½-inch to 2-inch.
25 ¾-inch corporation cocks.	3 Mueller tapping machines for ½-inch to 1-inch.
143 ½-inch corporation cocks.	2 kits plumber's tools.
22 ½-inch stop and waste cocks, B. & M.	1 tool box.
86 ¾-inch stop and waste cocks, B. & M.	8 folding rods for turning on and off.
19 ¾-inch stop and waste cocks, Dwyer patent.	6 straight rods for turning on and off.
26 ½-inch corporation cocks.	2 pipe rimmer handles.
8 1½-inch stop and waste valves with stopcock tops.	2 2-inch taps.
8 1¼-inch stop and waste valves with stopcock tops.	1 1½-inch tap.
1 lot samples of stop and waste cocks.	1 1¼-inch tap.
1 lot samples corporation cocks.	1 1-inch tap.
1 lot small pipe fittings, old.	1 ¾-inch tap.
8 stop boxes without covers, Dwyer patent.	1 ½-inch tap.
15 extra stop box bases, Dwyer patent.	2 ¾-inch taps.
6 middle stems to stop boxes, B. & M.	1 2-inch rimmer.
46 plugs from ½-inch to 2-inch.	1 1½-inch rimmer.
145 Dwyer patent stop boxes, complete	1 1¼-inch rimmer.
8 extra castings for stop box covers.	1 1-inch rimmer.
212 brass bolts for stop box covers.	2 2-inch drills.
1 lot goose necks ½-inch to 1-inch for corporation cocks.	2 1½-inch drills.
3 tunneling bars.	1 1-inch drill.
9 shovels.	1 ¾-inch drill.
3 dirt rammers.	1 ½-inch drill.
2 asphalt axes.	1 ¾-inch drill.
2 connection drills.	1 ½-inch drill.
9 drill hole scrapers.	1 ¾-inch drill.
1 drill hole pump.	1 extra 13-16-inch drill.
7 sand augers.	1 extra 15-16-inch drill.
2 sand scoops.	1 pair callipers.
10 sand scoop and auger handles.	1 ball face hammer.
1 electric battery.	1 draw knife.
	1 hand axe.
	1 monkey wrench.
	1 Stillson wrench.
	2 valve rods.
	50 feet ½-inch tin pipe for thawing.
	4 poles for stop boxes.
	2 gasoline furnaces.
	1 windlass for sand rock tunnels.
	1 tap handle.
	1 2-inch solder nipple.
	1 2½-inch solder nipple.
	1 1¼-inch solder nipple.
	1 grab rod for stop boxes.

## MIDWAY STATION.

## GATES.

- |                              |                  |
|------------------------------|------------------|
| 1 6-inch gate box, complete. | 3 gate wrenches. |
| 1 valve rod.                 |                  |

## HYDRANTS.

- |                      |                         |
|----------------------|-------------------------|
| 1 S. Mathew hydrant. | 3 hydrant wrenches.     |
| 6 globe valves.      | 1 seat wrench.          |
| 1 ring valve.        | 2 monkey wrenches.      |
| 1 valve seat.        | 4 standpipe wrenches.   |
| 1 stuffing box.      | 3 files 14 inches long. |
| 1 revolving nut.     | 1 rasp, 14 inches long. |

## PIPE-LAYING TOOLS.

- |                        |                           |
|------------------------|---------------------------|
| 1 pick.                | 2 yarning tools.          |
| 1 set tackle blocks.   | 5 caulking sets.          |
| 1 dirt scraper.        | 6 diamond points.         |
| 1 3-legged derrick.    | 1 cutting chisel.         |
| 1 wheelbarrow.         | 1 cold chisel.            |
| 2 16-pound sledges.    | 1 lead furnace on wheels. |
| 3 chains, 6 feet long. | 1 lead pot on furnace.    |
| 1 striking hammer.     | 2 lead ladles.            |
| 1 pipe rammer.         | 3 cape chisels.           |
| 1 tunnelling bar.      | 2 pairs set tongs.        |
| 1 caulking hammer.     | 1 crowbar.                |

## CONNECTION STOCK AND TOOLS.

- |                                |                                      |
|--------------------------------|--------------------------------------|
| 3 1-inch corporation cocks.    | 5 stop cock poles.                   |
| 10 ¾-inch corporation cocks.   | 2 faucets with 3 feet pipe.          |
| 7 ¾-inch corporation cocks.    | 15 brass nipples, ¾-inch to 1½-inch. |
| 7 1-inch stop and waste cocks. | 1 pair ¾-inch pipe tongs.            |
| 8 ¾-inch stop and waste cocks. | 1 pair plyers.                       |
| 1 stop cock rod.               |                                      |

## STABLE AND MISCELLANEOUS.

- |                              |                        |
|------------------------------|------------------------|
| 1 truck.                     | 1 handsaw.             |
| 1 garden hose, 50 feet long. | 1 mason's trowel.      |
| 1 grindstone.                | 2 small augers.        |
| 25 feet 1-inch rope.         | 1 row boat and 2 oars. |
| 3 lanterns.                  | 1 scythe.              |
| 1 work bench with pipe vise. | 2 spring wagons.       |
| 1 spirit level.              | 1 top buggy.           |
| 1 buck saw.                  |                        |

## HIGH SERVICE RESERVOIR.

## DWELLING.

- |                         |                           |
|-------------------------|---------------------------|
| 4 chairs.               | 1 grindstone.             |
| 1 rocker.               | 2 gate wrenches.          |
| 1 rug, 7x9 feet.        | 1 air vent rod.           |
| 1 table.                | 1 stop wrench for valves. |
| 1 screen door.          | 2 sets sprinkling hose    |
| 3 window shades.        | 1 spade.                  |
| 2 storm doors.          | 3 rakes.                  |
| 2 scythes.              | 1 sickle.                 |
| 4 cellar storm windows. | 1 manure fork.            |

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12 storm windows.  
8 shovels.  
2 picks.  
1 lawn mower.  
8 scythe stones.  
10 window screens.

1 coal stove with 6 pieces stove pipe.  
1 paint brush.  
60 feet  $\frac{1}{2}$ -inch rope.  
1 16-pound sledge hammer.  
2 mortar hoes.

## SHED.

1 pick.  
5 shovels.  
1 sledge.  
2 lagging caps.  
2 grub hoes.  
1 wheelbarrow.  
1 chain, 9 feet long.  
6  $1\frac{1}{2}$ -inch pipes, 6 feet long.  
10 steel brooms.

5 sections  $1\frac{1}{2}$ -inch hose, 50 feet long.  
3 hose nozzles.  
4 floating rafts.  
1 1-gallon oil can.  
1 bundle shingles.  
1 monkey wrench.  
14 corn brooms.  
150 feet  $\frac{1}{2}$ -inch rope.  
20 pounds nails.

## MCCARRON LAKE PUMPING STATION.

1 vise.  
1 set of screw dies and taps.  
1 set of screw dies and taps, from  $\frac{1}{4}$ -inch to 1-inch.  
1 set of dies and tap, from 1-16-inch to  $\frac{1}{4}$ -inch.  
1 set of pipe dies and taps, from  $\frac{1}{4}$ -inch to  $\frac{3}{4}$ -inch.  
1 set of pipe dies and taps, from 1-inch to 2-inch.  
2 pipe cutters.  
1 pair 2-inch pipe tongs.  
1 24-inch pipe wrench.  
1 12-inch pipe wrench.  
1 22-inch Coe's wrench.  
1 14-inch Coe's wrench.  
1 8-inch Coe's wrench.  
1 6-inch Coe's wrench.  
1 portable blacksmith forge.  
1 anvil.  
1 sledge hammer.  
2 hand hammers.  
1 soft hammer.  
6 files.  
2 saws.  
1 axe.  
1 hatchet.  
1  $1\frac{1}{2}$ -ton chain block.  
1 3-ton chain block.  
1 set steel wrenches, for Nos. 1, 2 and 3 pumps.  
1 24-inch square.  
6 chairs.  
4 ladders.  
1 good cupboard.  
1 oil and waste cupboard.  
1 work bench.  
5 cuspidors.  
1 ratchet and drills.  
1 ratchet, brace and bit.  
3 tack screws.  
1 draw-knife.  
1 planer.  
6 chisels.  
1 Edison's recording gauge.  
1 Thompson indicator.  
1 lot of old pipe and fittings.

50 feet of  $1\frac{1}{4}$ -inch rubber hose.  
50 feet of  $\frac{3}{4}$ -inch rubber hose.  
3 oil tanks.  
3  $\frac{1}{4}$ -gal. oil cans.  
2 3-quart oil cans.  
4 hand oilers.  
1 12-inch level.  
2 lawn mowers.  
20 bars soap.  
35 cans of lye.  
20 boxes matches.  
1 steel coal wheelbarrow.  
3 coal scoops.  
2 coal hammers.  
1 Fairbanks 6-ton scale.  
1 Fairbanks 1,000-lb. scale.  
1 grindstone.  
3 large tubular lanterns.  
4 small lanterns.  
1 clock.  
1 writing desk.  
65 electric lamps.  
2 shovels.  
1 water pail.  
1 Concord buggy.  
1 cutter.  
1 robe.  
1 regrinding valve machine, from  $\frac{1}{4}$ -inch to 2-inch.  
1 old 54-inch boiler front.  
1 stove with pipe at terminal chamber.  
1 manhole wrench.  
1 lot of old castings, pipes, valve and fittings, from  $1\frac{1}{2}$ -million pump.  
1 set of old rubber valves, from 6-million pump.  
1 set brass valves, from 3-million pump.  
1 air chamber.  
412,474 lbs. Youghiogheny coal.  
1 cord wood.  
1 cord edgings.  
10 gallons cylinder oil.  
35 gallons engine oil.  
30 gallons kerosene oil.  
18 lbs. waste.



2 gate wrenches.	10 lbs. piston rod packing.
3 steel brooms.	1 large truck for hauling 20 to 36-
1 block and rope, $\frac{3}{4}$ -inch.	inch pipes (4 wheeled.)
2 brooms.	1 large truck for hauling 12 to 20-
1 pair of rubber boots.	inch pipes (2-wheeled).

## WEST SIDE PUMPING STATION.

1 vise.	1 set engineer's 5-piece brass hand
1 24-inch pipe wrench.	ollers.
1 14-inch pipe wrench.	2 $\frac{1}{2}$ -gal. measures.
1 hand saw.	2 hand ollers.
1 axe.	1 set wrenches for pumps.
1 hatchet.	1 set fire tools.
8 oil tanks.	25 feet $\frac{3}{4}$ -inch steam hose.
1 1,000-lb. Fairbanks scale.	100 feet of $\frac{3}{4}$ -inch garden hose.
1 work bench.	1 lawn mower.
2 coal shovels.	1 hay rake.
1 wardrobe.	1 4-inch boiler flue cleaner.
1 clock.	25 feet of 1-inch hose.
3 large tubular lanterns.	44,000 lbs. coal.
1 writing desk.	7 gallons cylinder oil.
2 chairs.	37 gallons engine oil.
1 gate wrench.	18 gallons kerosene oil.
1 steel coal wheelbarrow.	10 lbs. piston rod packing.
1 cuspidor.	5 lbs. waste.
1 step ladder.	

## VADNAIS LAKE PUMPING STATION.

## GATE HOUSE.

4 storm windows.	4 steel traps.
4 window screens.	2 gate wrenches.
2 brooms.	1 gate lock and key.
1 steel broom.	1 boat chain.
1 shovel.	1 row boat.
1 galvanized pail.	1 pair oars.
1 ice chisel.	1 pair rubber boots.

## DWELLING HOUSE.

15 storm windows.	1 kalsomine brush.
15 window screens.	2 storm doors.
2 screen doors.	2 ventilators for chimneys.
1 thermometer.	1 lawn mower.
1 hand pump for cistern.	100 feet $\frac{3}{4}$ -inch garden hose with reel.

## PUMPING STATION.

1 heating stove.	1 steel coal wheelbarrow.
1 8-day clock.	1 grindstone.
2 S. wrenches.	1 axe.
4 monkey wrenches.	1 grub hoe.
2 Stillson pipe wrenches.	1 brush hook.
2 cold chisels.	1 draw knife.
4 files.	1 writing desk.
2 hammers.	2 chairs.
2 hand lanterns.	1 cuspidor.
5 large globe lanterns.	1 iron block plane.
1 spirit level.	1 tray brass oiler.
1 paint brush.	3 steel ollers.
1 hand saw.	1 brace and bit.
1 wooden rod with ball joint for flue.	1 belt punch and rivet set.

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1 3-inch steel flue cleaner.	1 1384 scale.
1 cleaner.	1 Fairbanks platform scale.
3 50-gallon oil tanks.	1 No. 4 centrifugal pump.
1 coal pick.	1 scrub brush.
2 scoop shovels.	1 mop.
50 feet 1-inch rubber hose and nozzle.	10 centers for Pleasant lake conduit.
50 feet 1½-inch rubber hose and nozzle.	5 water barrels.
2 oil cans.	1 level board 12 feet long.
1 automatic oil tilter.	1 pile driver, complete, with 1,900-lb. hammer.
1 step ladder.	1 sheeting driver, complete.
1 shovel.	23,200 lbs. coal.
1 pick.	50 gallons cylinder oil.
1 vise.	25 gallons engine oil.

### BALDWIN LAKE PUMPING STATION.

1 old smokestack, 34 inches by 45 feet.	3 pairs long rubber boots.
4 wheelbarrows.	1 flatboat, 4x18 feet.
3 short handle shovels.	1 snow shovel.
2 long handle shovels.	1 hand axe.
2 crowbars.	2 grate bars.
2 ice chisels.	2 pairs truck wheels.
1 crosscut saw.	2 long boiler braces.
1 pick.	2 short boiler braces.
1 coal shovel.	1 large lantern.
3 mauls.	2 small lanterns.
20 wrenches to pump.	1 lead furnace.
1 ¼-inch ship auger.	1 gate wrench, 5 feet long.
	17 cords oak wood.

### PLEASANT LAKE GATE HOUSE.

1 boat, 4x16 feet.	1 ladder, 14 feet long.
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### CENTERVILLE PUMPING STATION.

1 vise.	25 feet of old 1½-inch rubber hose.
1 pair pipe tongs.	1 pair rubber boots.
1 24-inch pipe wrench.	5 10-inch brass vacuum gauges.
1 12-inch pipe wrench.	1 ¾-inch auger.
1 24-inch Coe's wrench.	2 crowbars.
1 12-inch Coe's wrench.	6 chisels.
1 8-inch Coe's wrench.	4 files.
1 8-inch S wrench.	2 caulking tools.
1 hand hammer.	2 steel hard rollers.
1 coal hammer.	1 No. 3 Black boiler feed pump, belongs to Baldwin Lake Station.
2 saws.	1 box stove, for wood, and 60 feet stovepipe.
1 hatchet.	1 writing desk.
1 axe.	1 set steel wrenches.
3 oil tanks.	1 lantern cupboard.
2 1-quart cans.	2 gate wrenches.
2 3-quart cans.	1 hand pushcar.
1 steel coal wheelbarrow.	200 feet light railroad track.
2 coal scoops.	1 forge hand pump.
1 grindstone.	1 wood wheelbarrow.
6 large lanterns.	2 cuspidors.
3 small lanterns.	275 cords oak wood.
3 bracket lamps.	97 cords soft wood.
1 clock.	28,000 lbs. Youghiogheny coal.
1 draw-knife.	25 gallons cylinder oil.
1 ratchet, brace and bit.	25 gallons engine oil.
1 chain.	10 gallons kerosene oil.
1 2-ton chain block.	70 lbs. waste.
1 4-inch steam flue cleaner.	12 lbs. packing.
1 4-inch boiler flue scraper.	
50 feet of new 1½-inch rubber hose.	

## CENTERVILLE LAKE TOOL HOUSE.

2 tool boxes.	1 spirit level.
2 ratchet wrenches.	1 50 feet tape.
6 brace wrenches.	1 cross-cut saw.
6 hand wrenches.	1 2-inch auger.
1 driving maul.	1 hand pump.
1 coopering maul.	1 axe.
4 stave setters.	1 caulking hammer.
3 hammers.	1 claw hammer.
4 hoop clampers.	1 sledge hammer.
2 stave chisels.	1 striking hammer.
2 hoop drivers.	1 set caulking tools.
$\frac{1}{2}$ keg of clips for end of staves.	1 cant hook.
2 kegs of steel shoes for bands.	5 picks.
200 $\frac{1}{2}$ -inch old steel bands for wooden conduit.	1 plow.
300 feet condemned staves for wooden conduit.	2 slush scrapers.
6 long handle shovels, square pointed.	11 wheelbarrows.
6 long handle shovels, round pointed.	1 post auger.
14 short handle shovels, round pointed.	2 long handle rakes.
3 short handle shovels, square pointed.	1 boat and 2 oars.
	1 chariot for inspection of conduits.
	1 pile driver, complete, with a 500-lb. hammer.

## METER DEPARTMENT.

1 kit plumber's tools.	1 sheet cardboard packing.
2 plumber's furnaces.	3 large meter boxes.
2 tinner's solder irons.	12 small meter boxes.
9 pipe wrenches.	1 lot miscellaneous fittings, $\frac{1}{4}$ -inch to 4-inch.
7 S. wrenches.	2 sets Empire inside gearing.
2 machinist hammers.	1 doz. Empire gear wheels.
1 rivet hammer.	14 sets Crown inside gearing.
14 files.	3 doz. Crown gear wheels.
6 screw drivers.	15 $\frac{1}{2}$ Crown covers.
3 pair plyers.	5 $\frac{1}{2}$ Crown cylinders.
1 small chisel.	4 $\frac{1}{2}$ Crown pistons.
3 cold chisels.	2 $\frac{1}{4}$ Crown straight reading dials.
2 small punches.	1 1-inch Crown straight reading dial.
2 callipers.	20 sets Hersey inside gearing.
1 divider.	2 do. Hersey gear wheels.
1 breast drill.	3 $\frac{1}{2}$ Hersey covers, complete.
15 twist drills, 1-16-inch to $\frac{1}{4}$ -inch.	1 doz. $\frac{1}{4}$ Thomson "B" gear wheels.
1 set stock and dies, $\frac{1}{8}$ -inch to $\frac{1}{2}$ -inch.	1 doz. $\frac{1}{4}$ Thomson "B" eccentric gears.
2 compass saws.	1 1-inch Thomson "B" piston and chamber.
1 hack saw.	2 $\frac{1}{4}$ -inch Thomson "B" discs.
6 hack saw blades.	4 $\frac{1}{4}$ -inch Thomson "B" discs.
4 small sheet bars.	1 1-inch Thomson "B" disc.
1 gasket cutter.	1 $\frac{1}{2}$ -inch Trident disc.
4 pressure gauges.	10 Trident gear wheels.
2 hand saws.	1 $\frac{1}{4}$ -inch Trident bottom.
1 2-foot rule.	3 $\frac{1}{4}$ -inch Pittsburg bottom castings.
1 carpenter's plane.	1 $\frac{1}{4}$ -inch Pittsburg inside gearing.
1 saw set.	5 $\frac{1}{4}$ -inch Pittsburg discs.
1 carpenter's hammer.	1 $1\frac{1}{4}$ -inch Pittsburg disc.
4 wood chisels.	5 Westinghouse inside gearing.
1 50-foot tape.	5 doz. Pittsburg gear wheels.
1 2-foot square.	14 Worthington plungers.
2 pounds sealing wax.	12 Worthington rings.
2 sealing stamps.	
1 Fairbanks 1,200-pound scale.	
1 10 cubic foot testing tank.	

## REPORT OF CITY ENGINEER.

OFFICE OF THE CITY ENGINEER.  
ST. PAUL, MINN., Jan. 1, 1899.

*To the Board of Water Commissioners,*

GENTLEMEN: I submit herewith my annual report of work under charge of the Engineering Department during the year ending Dec. 31, 1898, with tables relative to the water supply and water consumption, and the cost of pumping at the various stations.

### CONTRACT WORK.

The contract work under charge of the Engineering Department during the year 1898 has been unusually small, and is embraced in the following statement. Most of the items are for work let in 1897 and not fully completed until this year:

McCarron Lake, foundation stone for pumping engine, Minneapolis & Kettle River Sandstone Co., contractor.....	\$554.56
Venturi meter, Builders' Iron Foundry, contractor.....	1,151.75
McCarron Lake pumping engine, Edward P. Allis Co., contractors .....	26,814.33
McCarron Lake pumping engine, inspection, Robert W. Hunt & Co., contractors.....	850.00
McCarron Lake pumping station, boilers, John Kenny, contractor .....	1,223.00
Centerville engine house, Hennessy & Cox, contractors, estimates allowed.....	50.00
Centerville pumping engine, Edward P. Allis Co., contractor, estimates allowed.....	350.00

### SURVEYS AND FIELD WORK.

A considerable amount of work was done to the outlet of Baldwin Lake in setting and reading gauges, taking water elevations, obtaining evidence for the suit for damages for flooding haylands, brought by farmers owning property about Rice Lake, and the results obtained corroborated the previous work done, as showing that in reality no cause of action existed. As the suits, however, have been satisfactorily settled on a

basis that is practically abandoning the suits, and acknowledging that there were no proper grounds for damages, the evidence will not be needed, but may be of advantage in future extensions.

A survey was made and plans furnished and filed of the land purchased about the connection between Centerville Lake and Peltier Lake, whereby rights were obtained to deepen the channel between the two lakes, and thereby make available a largely increased supply to the pumping plant at Centerville Lake. The work of deepening this connection has been done under the direction of the superintendent at a cost of \$374.37.

Maps have been prepared and filed of the change of location of the right of way between Pleasant Lake and Sucker Lake.

Plans and estimates were made, lines and levels were given and the work laid out for the improvement of the outlet of Pleasant Lake. This work had been in contemplation for two or three years, but, owing to the high water of previous years, had not been attempted. The estimated cost of the work was \$9,400. It seemed advisable to the board to do this work by days' labor, and the superintendent was instructed to take charge and carry out the improvement. He reports the entire cost at \$11,227.19. It was found necessary to extend the intake pipe out into the lake about 170 feet and put in pile foundation for the outer end, which was not contemplated in the original estimate. This, with the addition of a thirty-six-inch valve and screens, practically accounts for the increased cost. We are now enabled to draw off fully two feet more from Pleasant Lake, adding about four hundred million gallons to the reservoir capacity. The water is now under perfect control, and the amount drawn off can be determined by their measurement.

In accordance with your directions, I am having a careful survey made around the shores of Centerville and Peltier Lakes, with a view to condemning these shores to enable us to hold the water in the lakes to elevation 190 above city base, and to build a dam controlling the water in these lakes, at the outlet of Peltier Lake. This will enable us also to make some necessary dredging of these lakes to increase the storage capacity and improve the quality of the water.

#### MCCARRON LAKE PUMPING ENGINE.

The ten-million-gallon pumping engine at McCarron Lake pumping station, a contract for which was let last year to the Edward P. Allis Company of Milwaukee, Wis., has been installed.

The new foundation for the engine was put in by the superintendent by days' labor at a total cost of \$1,916.28. This is \$266.46 more than the amount deducted from the Edward P. Allis Company contract, but in accordance with my suggestion, with the approval of the board, about seven yards of masonry were put in, in excess of the amount called for by the plans, as additional security. Allowing for this additional work, the price per cubic yard is very close to the requirements of the specifications.



In accordance with the contract, the engine was required, during a running test of seventy-two hours, to develop a duty of 130,000,000 foot pounds per thousand pounds of steam, and in case the engine shall fail to develop said duty, through a lack of efficiency of the engine, a deduction will be made from the contract price of \$1,700 for each one million foot pounds, which the duty falls below 130,000,000; but in case the engine exceeds, during the seventy-two-hour test, an average duty of 130,000,000 foot pounds per thousand pounds of steam, the contractor will receive a bonus for each million foot pounds the duty exceeds 130,000,000, in the ratio of \$600 for each 1,000,000 foot pounds which the duty comes above 130,000,000; provided, however, that the maximum bonus allowed shall not exceed \$6,000.

The official test of the engine was made under the direction of Robert W. Hunt & Co., of Chicago, commencing at 7 p. m., Nov. 13, 1898, and continuing seventy-two hours, and they have submitted a very carefully prepared detailed report. The contractor was represented by Mr. Arthur West, and the city by myself and part of the Engineering Department, who assisted in taking the readings. I herewith submit as part of my report the following extract from the official report of the experts, in order to make a permanent record of easy reference.

#### DESCRIPTION OF ENGINE.

"The engine is of the vertical, triple expansion, crank and fly-wheel type, with single acting outside packed plunger pumps, all of the usual Allis design. The three pump barrels are placed beneath and directly in line with the steam cylinders, and the plungers connected to the steam cross-heads by means of four distance rods. One end of the main bed plates is supported on the pump chambers, the other end being carried on a masonry pier. The shaft has three cranks set at angles of 120°, there being two fly-wheels on the shaft.

There are 840 3½-inch rubber valves in the pumps, the valves being mounted on cages. Surface condenser is located in the suction pipe. Suction pipe is 30 inches diameter; discharge pipe, 24 inches diameter. The principal dimensions of the engine are as follows:

Number of cylinders.....	3
Diameter of H. P. cylinder, inches.....	21.5
Diameter of I. P. cylinder, inches.....	38
Diameter of L. P. cylinders, inches.....	56
Diameter of piston rods, inches.....	3.875
Number of plungers.....	3
Diameter of plungers, inches.....	24.75
Stroke of plungers and pistons, inches.....	42
Plunger displacement, cubic feet.....	11.6936
Plunger displacement, per revolution, cubic feet.....	35.0800
Plunger displacement, per revolution, U. S. gallons.....	262.42
Clearance in H. P. cylinder, per cent.....	2

Clearance in I. P. cylinder, per cent.....	1.64
Clearance in L. P. cylinder, per cent.....	1.37
Area of clear opening of suction valves for each plunger, square inches .....	546
Area of clear opening of discharge valves for each plunger, square inches.....	546
Area of each plunger, square inches.....	481.11

## CONDUCT OF THE TRIAL.

The engine had been in service for several months, and the conditions during the trial were unchanged from the ordinary conditions only in that the condensed steam was weighed, and that it was found necessary to throttle the valve in the discharge main in order to maintain the contract head.

The amount of water pumped was measured by means of a weir located at the reservoir, about a mile and a half distant. The weir was read by means of a scale graduated to read in cubic feet per second. The level of the suction was read by means of a glass gauge connected directly to the suction main. The pressure in the discharge main was read by means of a mercury column.

The condensed steam was weighed in two barrels, placed on platform scales, which had been corrected. The condensation from the jackets was also weighed in a barrel placed on a scale and supplied with a cold water connection. The time that each barrel was weighed was observed and noted, as well as its net and tare weights.

The quality of the steam was not taken, as the manufacturer's representative did not think it necessary, and agreed not to ask for any allowance for the entrained water. The boiler feed pump and air pump were connected directly to the low pressure cross-head, and hence no allowance for steam thus used is necessary.

It was decided to take five-minute weir readings for the first and last twelve hours of the test, and to use these readings in calculating the amount of water pumped and the slip. Other readings were taken, however, all during the test, in order to detect any error in the weir. A telephone connection between the weir house and the pumping station enabled the observers to compare the pump displacement and the weir delivery constantly.

The leakage in the discharge main between the pumping station and the weir was determined at the end of the test by closing the discharge valves at the engine and measuring the drop of water in the weir tank. This was reduced to amount of displacement and added to the factor obtained by the weir measurement.

At one time during the test the jacket discharge was turned into the hot well, and the water escaping around the plungers was caught and weighed. The jacket water for this time was calculated from the amounts obtained for the two previous and subsequent hours.

Indicator diagrams were occasionally taken from the steam end.

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## RESULTS OF DUTY TRIAL.

1. Duration of trial in hours.....	72
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## AVERAGE PRESSURES.

2. Steam pressure at engine by gauge, pounds.....	135.7
3. Steam pressure at engine corrected, pounds.....	127.9
4. Pressure in first receiver by gauge, pounds.....	31.8
5. Pressure in second receiver by gauge, pounds.....	.28
6. Vacuum by gauge.....	12.83
7. Discharge head on pumps, feet.....	146.638
8. Discharge head on pumps, pounds.....	63.49
9. Suction head on pumps, feet.....	.652
10. Total head on pumps, feet.....	146.586
11. Total head on pumps, pounds.....	63.47

## AVERAGE TEMPERATURES.

12. Temperature of water pumped, degrees, Fahrenheit.....	45
13. Temperature of condensed steam, degrees, Fahrenheit.....	64

## CONDENSED STEAM.

14. Total condensed steam, pounds.....	219,601.5
15. Total condensed jacket steam, pounds.....	38,443.5
16. Total condensed steam, pounds.....	258,045
17. Percentage of jacket steam.....	14.9

## COAL.

18. Total coal burned, pounds.....	34,072
19. Total ash, pounds.....	3,002
20. Total combustible.....	31,070
21. Percentage of ash.....	8.8

## CAPACITY.

22. Revolutions in 72 hours.....	116,649
23. Average revolutions per minute.....	27.002
24. Weight of a cubic foot of water at 45° Fahrenheit, pounds .....	62.42
25. Pounds pumped in 72 hours (by weir).....	254,308,223
26. Gallons pumped in 24 hours (by weir).....	10,159,000
27. Gallons pumped in 24 hours (plunger displacement)...	10,203,076
28. Leakage around plungers, per cent.....	.19
29. Slip of valves, per cent.....	.25
30. Total slip and leakage, per cent.....	.44

## WORK.

31. Work delivered in 72 hours, foot-pounds.....	37,278,025,175
32. Work delivered in 24 hours, foot-pounds.....	12,426,008,021
33. Total indicated horse power.....	279.56
34. Total delivered horse power.....	262.61
35. Friction, per cent.....	6.11
36. Steam per I. H. P., per hour, pounds.....	12.82
37. Steam per D. H. P., per hour, pounds.....	13.64
38. Coal per I. H. P., per hour, pounds.....	1.69
39. Coal per D. H. P., per hour, pounds.....	1.80

## DUTY.

40. Foot-pounds, per 1,000 pounds of steam.....	144,463,000
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The engine ran smoothly during the seventy-two hours, and without undue pounding or heating of the bearings.

As the duty obtained was 144,463,000 foot-pounds, this was 14,463,000 foot-pounds in excess of the guaranteed 130,000,000 foot-pounds, and the E. P. Allis Co. are entitled to the maximum bonus, viz., \$6,000.

Respectfully submitted,

For ROBERT W. HUNT & CO.,

JNO. C. McMYNN.

The results of the test were satisfactory, both to the contractor, as earning all the bonus permissible under the contract, and to the city, as having obtained a very efficient pumping plant at an extremely low figure.

The construction of the ten-million gallon engine required changes in the pipe system at McCarron Lake station, and plans were made for the rearrangement of the suction and discharge mains. We have now inside the building a 36-inch suction main connected with a 24-inch and 30-inch from the terminal chamber, and the discharge pipes from the different pumping engines have been changed to give the most direct and readily controlled connections with the force main to the reservoir. All the work of these changes has been done under the direction of the superintendent by day's labor at a cost of \$7,627.12, as is shown in detail in his report.

## VENTURI METER.

Owing to the generally disturbed condition of the pumping plant at McCarron Lake on account of building the engine foundations, etc., the Venturi meter for the low service supply was not put in operation until the latter part of July. During the time it has been in service it has given satisfactory results. We now have means of accurately measuring the amount of water delivered daily to the city from the different sources of supply, by Venturi meter on the Phalen Lake low service system, by Venturi meter on the Vadnais Lake low service system, and by plunger dis-

placement and weir measurement on the high service system, enabling us to keep a careful supervision over each system.

#### WATER CONSUMPTION.

The usual record has been kept of the water consumption during the year in each system, the results of which are shown in Table No. 1. The total amount of water used was 2,920,017,722 gallons, being an average of 8,000,000 gallons per day. This supply has been obtained from the following sources:

SOURCE.	Total.	Av. Daily Supply.
Watershed of Vadnais and tributary lakes...	634,772,636	1,739,105
From storage capacity, Vadnais Lake.....	502,370,000	1,376,346
Artesian wells at Vadnais Lake.....	816,776,403	2,237,743
Lake Phalen.....	181,893,683	498,339
Otter Lake.....	190,670,000	522,384
Centerville Lake and artesian wells.....	593,535,000	1,626,120
Totals .....	2,920,017,722	8,000,037

In the Vadnais Lake supply 634,772,636 represents the amount collected on the watershed. This year, owing to the improvements going on at Pleasant Lake, the storage capacity was drawn to the extent as shown above, but under ordinary conditions it would have been replenished from the Centerville Lake system.

In accordance with my recommendation in last year's report, and your subsequent instructions, an effort has been made to ascertain the actual amount of water per service and per capita in the residence districts, and from the results thus obtained to make an estimate of the amount of water actually used by private consumption, and approximately the amount used for public service and waste. To obtain these results a record of 1,185 metered services in different sections of the residence district was tabulated, and a census was also taken by the operating department of the number of inhabitants to each tap.

These results were turned over to the Engineering Department, and a careful analysis has been made. These tables are too large for publication, but the following condensed tables show the results which were obtained:

	Dayton's Bluff and Arlington Hill.	Midway District.	7th, 8th and 9th Wards.	Total.
Number of services.....	331	283	571	1,585
Number of people.....	1,676	1,293	2,915	5,884
Number of people per service .....	5.064	4.569	5.105	4.963
Average daily consumption, per service.....	84.18	118.31	192.88	140.06
Average daily consumption, per capita.....	16.63	25.78	36.44	28.22



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January ..  
February ..  
March ....  
April .....  
May .....  
June .....  
July .....  
August ...  
September  
October ..  
November  
December

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1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

	Number of Services.	Daily Consumption Per Service, Gallons.
West St. Paul high service.....	110	562.05
Low service from Vadnais Lake.....	4,142	953.90
Low service from Phalen Lake.....	1,003	455.90
<hr/>		
Total low service.....	5,345	749.6
High service.....	8,626	462.5
<hr/>		
Total high and low service.....	13,971	572.6

These tables are interesting as showing not only the actual amount of water used per capita, but also showing the amount used in the different districts in accordance, in a large measure, with the class of buildings.

The results obtained from these 1,185 metered services agree very well with those of 1897 made on a smaller scale. While the per capita consumption is increased, so also is the recorded metered consumption per service, and the average consumption per service throughout the whole high service district.

TABLE NO. 2.

## ESTIMATED DISTRIBUTION OF WATER CONSUMED ON THE HIGH SERVICE SYSTEM IN 1898.

MONTH.	WATER USED FOR PUBLIC PURPOSES.		PROBABLE AMOUNT USED FOR DOMESTIC PURPOSES.		PROBABLE WASTE.		TOTAL AMOUNT OF WATER.	
	Sprinkling and Flush- ing of Streets.	Flushing of Mains— Waste from Reservoir.	Total.	Daily Per Service.	Total.	Daily Per Service.	Total.	Daily Per Service.
January.....			28,000,000	105	68,600,200	256	96,600,200	361
February.....			27,000,000	114	69,387,000	250	96,387,000	364
March.....			25,000,000	95	69,552,300	260	94,552,300	359
April.....	3,280,000		26,000,000	102	68,956,000	268	98,236,000	380
May.....	16,120,000	2,800,000	38,000,000	144	71,598,000	268	125,518,000	470
June.....	18,730,000		33,000,000	128	76,606,000	266	128,396,000	496
July.....	26,435,000	2,800,000	63,000,000	236	70,630,300	264	159,865,300	598
August.....	23,302,000	4,500,000	62,000,000	232	63,592,000	238	153,365,700	574
September.....	24,790,000		57,000,000	223	62,929,600	243	144,680,600	559
October.....	6,750,000		30,000,000	111	77,271,300	280	114,030,300	426
November.....	4,100,000	20,000,000	25,000,000	97	86,623,100	335	135,723,100	524
December.....			25,000,000	95	92,803,400	347	117,803,400	441
Total.....	123,486,000	30,100,000	430,000,000		839,600,800		1,456,108,200	
Average daily per service.....				140		276		462

TABLE NO. 3.

DISTRIBUTION OF WATER CONSUMED ON HIGH AND LOW SERVICE,  
1898.

MONTH.	WATER USED FOR PUBLIC PURPOSES.		WATER USED FOR DOMESTIC PURPOSES AND WASTE.		TOTAL CONSUMPTION.	
	Sprinkling and Flush- ing of Streets.	Flushing of Mains and Water from Reservoir.	Total.	Daily Per Service.	Total.	Daily Per Service.
January.....			201,590,056	465	201,590,056	465
February.....			188,064,102	481	188,064,102	481
March.....			205,009,623	473	205,009,623	473
April.....	6,975,000		195,012,317	465	201,987,317	482
May.....	31,307,000	5,000,000	214,908,761	496	251,215,761	580
June.....	37,240,000		223,065,300	532	260,305,300	621
July.....	48,400,000	5,000,000	268,517,570	620	321,917,570	743
August.....	43,900,000	4,500,000	234,335,489	541	282,735,489	654
September.....	45,940,000		227,490,496	543	273,430,496	652
October.....	15,907,000		219,081,488	506	234,988,488	543
November.....	9,210,000	20,000,000	224,280,108	535	253,490,108	605
December.....			245,283,412	566	245,283,412	566
Total.....	238,879,000	34,500,000	2,646,638,722		2,920,017,722	
Average daily per service....	47	7		518		572

Table No. 2 gives the distribution of water consumption on the high service system, showing the amount used for public purposes, domestic purposes, probable waste, and the average daily consumption per service. These figures are based upon the average metered service consumption for the different months as obtained from the observations of 1898. While the results are only approximate, the table bears strong evidence that it fairly represents existing conditions, and that about sixty per cent of the water pumped into the distribution mains is wasted, and these figures compare closely with the results obtained in 1894 by an entirely different method of observation.

It is difficult to estimate how large a proportion of this waste is due to leaks in the distribution mains and how much in the service pipes, but the detailed tables of the metered services show a considerable number of leaks, increasing the consumption from four to thirty-five times the normal. These are, of course, repaired as soon as made apparent by the increase in the amount of the water bill, but in unmetered services they are left to run unless discovered by the inspector or they increase to such an extent as to become a nuisance.

Table No. 3 gives a distribution of the water used for public and domestic purposes on both high and low systems, and shows the amount used for sprinkling and flushing, domestic use and waste during each month of the year; also the average daily consumption per service for the whole city.

The city of St. Paul has always shown a low rate of water consump-

tion per capita. On the basis of a population of 170,000 the amount per capita would only be forty-seven gallons for the year 1898, an excellent showing, due largely to careful management.

The results of the above tabulation seem to show conclusively that a large amount of waste still exists, that meters are the best check on waste, and that the proper and most equitable method of making water rates is by meter measurement, where the consumer pays for what he actually uses and is made responsible for the condition of his service pipes and plumbing.

#### COST OF PUMPING AT THE VARIOUS PUMPING STATIONS.

The following tabulation shows the cost of pumping at the various pumping stations. The duty of the engines is an approximation, owing to the imperfect records.

In this connection I would recommend that hot water meters be furnished for the McCarron Lake pumping station, in order that the feed water supplied to the boilers may be measured so that the value of the coal used can be readily ascertained:

#### MCCARRON LAKE PUMPING STATION.

	Gallons Pumped During 1898.	Pounds of Coal Consumed.	No. of Gal per Pound of Coal.
Four-million gallon engine.....	\$7,468,400	163,217	535.9
Six-million gallon engine.....	836,269,800	1,354,445	617.4
Ten-million gallon engine.....	532,430,000	653,471	814.8
Totals, three engines.....	1,456,168,200	2,171,133	.....
Average, three engines.....	.....	.....	670.7
Average duty during the year for four-million gallon engine...	.....	.....	62,926,657
Average duty during the year for six-million gallon engine....	.....	.....	71,369,609
Average duty during the year for ten-million gallon engine....	.....	.....	92,439,650
Average duty during the year for the whole plant.....	.....	.....	77,076,430

		Cost of Raising 1,000,000 Gal. One Foot.
Salaries for 1898.....	\$3,825.53	\$0.019053
Fuel .....	3,407.94	0.016958
Waste, oil and repair.....	379.50	0.001889
Totals .....	\$7,612.97	\$0.037900

#### WEST ST. PAUL PUMPING STATION.

Amount of water pumped during 1898, gallons.....	22,568,660
Average rate of pumping in twenty-four hours, gallons.....	61,833
Amount of fuel consumed, pounds.....	269,200
Average duty during the year.....	14,143,000



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		Cost of Raising 1,000,000 Gal. One Foot.
Salaries for 1898.....	\$1,320.00	\$0.27084
Fuel .....	434.29	0.09207
Waste, oil and repairs.....	64.90	0.01376
Totals .....	\$1,819.19	0.38567

VADNAIS LAKE PUMPING STATION.

Amount of water pumped during 1898, gallons.....	816,776,403
Amount of fuel consumed, pounds.....	589,320
Average duty during the year.....	49,100,000

As the pump does not fill within from eleven to twelve per cent, piston displacement has been used in figuring the work done on the suction side in obtaining the above duty.

		Cost of Raising 1,000,000 Gal. One Foot.
Salaries for 1898.....	\$990.00	\$0.030985
Fuel .....	1,051.89	0.032922
Waste, oil and repairs.....	128.02	0.004006
Total .....	\$2,169.91	\$0.067913

CENTERVILLE PUMPING STATION.

Amount of water pumped during 1898, gallons.....	532,430,000
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On account of insufficient data in regard to the suction lift of the pump, it is not practicable to give the duty or the cost per million gallons per foot.

PRECIPITATION, ST. PAUL, 1898.

In accordance with the report of P. F. Lyons, observer of the United States Weather Bureau, the total amount of precipitation at St. Paul for the year ending Dec. 31, 1898, was 25.34 inches. The average precipitation in accordance with our previous tabulation is 27.5 inches. The precipitation for 1898 is therefore a little more than two inches below the normal. The record by months is as follows:

January .....	.04	July .....	1.94
February .....	1.69	August .....	3.93
March .....	1.96	September .....	.00
April .....	1.22	October .....	5.81
May .....	3.40	November .....	1.59
June .....	2.71	December .....	.15

BALD EAGLE LAKE.

Nothing has been done during the past year relative to any condemnation proceedings to acquire the necessary land to open a ditch or canal between Otter and Bald Eagle Lakes, so that the overflow of Bald Eagle

OF THE CITY OF ST. PAUL, FOR 1898.

Lake in the spring might be brought directly into the Vadnais Lake tem, as recommended in my last report. I would again recommend the completion of the surveys about Centerville and Peltier Lakes the necessary surveys and maps be made to secure as soon as practicable the demnation of lands required for this purpose. It is not contemplate this scheme to draw down Bald Eagle Lake below the normal, but mo to utilize the overflow in connection with Otter Lake.

There is no doubt that this would prove an economical expenditure by saving the cost of pumping from Centerville Lake system.

Respectfully submitted,

L. W. RUNDLETT  
*City Engineer*

# CHIEF ENGINEER'S REPORT.

ST. PAUL, Dec. 31, 1898.

*To the Honorable President and Members of Board of Water Commissioners,*

GENTLEMEN: I herewith submit my fourteenth annual report of the operation of the four pumping stations for the year 1898:

McCarron Lake station has been in continual operation, and a considerable amount of work was done by taking out small engine and foundation and replacing it by the new ten-million pump; by changing all steam and water pipe connections. The new ten-million pump has been running seventy-three days and is giving perfect satisfaction. It was stopped last month for the purpose of being painted.

West Side station has been in continual operation, and has not required any repairing.

Vadnais Lake station has been in operation 190 days.

Centerville Lake station has been in operation forty-three days.

The following tabulated record shows the operation of the different pumping stations:

McCarron Lake Station—	
Total gallons pumped.....	1,456,168,200
Daily average gallons pumped.....	3,989,501
Total pounds of coal used.....	2,205,128
Daily average coal used.....	5,992
Daily increase since 1897 (gallons).....	482,301
West Side Station—	
Total number of gallons pumped.....	22,668,600
Daily average of gallons pumped.....	61,054
Total pounds of coal used.....	269,200
Daily average coal used.....	742
Daily increase since 1897 (gallons).....	17,767
Vadnais Lake Station—	
Total gallons pumped.....	924,765,600
Daily average gallons pumped.....	4,509,561
Total pounds of coal used.....	589,300
Daily average coal used.....	2,887

Respectfully submitted,

MARTIN FEIST,

Chief Engineer.

ST. PAUL WATER WORKS PUMPING STATION, MCCARRON LAKE.  
ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1898.

MONTHS, 1898.	NUMBER OF HOURS PUMPED.			NUMBER OF REVOLUTIONS.			NUMBER OF GALLONS PUMPED.			Total per Month Pumped.	Average per Day Pumped.	Total Coal Used per Day.	Average Coal Used per Day.
	Eng. No. 1.	Eng. No. 2.	Eng. No. 3.	Eng. No. 1.	Eng. No. 2.	Eng. No. 3.	Eng. No. 1.	Eng. No. 2.	Eng. No. 3.				
January.....	531½	559½	240,000	561,400	.....	.....	16,320,000	.....	80,280,200	96,600,200	3,116,135	177,773	5,734
February.....	.....	628	.....	611,100	.....	.....	.....	.....	87,387,300	87,387,300	3,120,975	168,509	6,018
March.....	125	573	.....	535,100	265,200	.....	18,083,600	.....	76,519,300	94,552,900	3,050,093	186,973	5,451
April.....	164	530	.....	395,700	395,700	.....	26,907,600	.....	71,328,400	98,236,000	3,274,533	171,122	5,704
May.....	118	629	.....	760,000	248,800	.....	16,018,400	.....	108,000,600	125,518,400	4,040,625	203,342	6,659
June.....	46½	624½	.....	804,800	.....	.....	13,308,600	.....	115,086,400	128,396,000	4,270,806	188,981	6,289
July.....	121	590	.....	140,500	105,600	.....	810,300	36,811,600	115,872,900	159,865,300	5,156,945	214,345	6,914
August.....	496	20	.....	503,800	31,000	.....	134,700	131,995,600	119,232,100	153,365,700	4,947,280	182,801	5,896
September.....	409	25	.....	530,200	.....	.....	2,108,000	.....	5,777,200	144,689,600	4,822,956	167,705	5,590
October.....	356	3	.....	433,100	.....	6,700	113,472,200	.....	968,100	114,030,300	3,678,966	155,242	5,007
November.....	300	248	.....	375,300	.....	261,500	98,328,600	.....	87,394,500	135,723,100	4,524,103	198,653	6,621
December.....	.....	735	.....	823,800	.....	.....	.....	.....	117,803,400	117,803,400	3,800,109	189,982	6,128
Totals..	1,708½	1,006½	5,236	5,848,000	1,286,300	.....	532,830,000	87,468,400	835,869,800	1,456,168,200	3,950,561	2,205,128	5,962

Total number of gallons pumped.....  
Daily average gallons pumped.....  
Total pounds of coal used.....  
Daily average pounds of coal used.....  
Daily increase since 1897, gallons.....

1,456,168,200  
3,950,561  
2,205,128  
5,962  
482,301

MARTIN PEIST,  
Engineer.

## ST. PAUL WATER WORKS PUMPING STATION, VADNAIS LAKE.

## ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1898.

MONTHS, 1898.	No. of Hours Pumped	Number of Revolutions	Number of Gallons Pumped.	Daily Average Gallons Pumped.	Total Coal Used.	Daily Average Coal.
May .....	490	1,104,800	97,222,400	4,861,120	56,600	2,830
June .....	604	1,531,500	130,532,000	4,551,068	86,120	2,570
July .....	685	1,806,900	141,407,200	4,561,522	87,900	2,835
August .....	587	1,385,000	121,932,800	3,933,316	74,700	2,499
September .....	655	1,545,900	150,039,200	4,534,640	84,600	2,820
October .....	604	1,635,400	145,675,200	4,690,200	93,400	3,013
November .....	542	1,315,100	115,728,800	3,857,026	85,100	2,836
December .....	144	343,500	30,228,000	5,038,000	20,900	3,483
Totals .....	4,561	10,508,700	924,765,600	4,508,561	590,300	2,887
Total gallons pumped.....					\$924,765,600	
Daily average gallons pumped.....					4,508,561	
Total pounds of coal used.....					589,300	
Daily average coal used.....					2,887	

HERMAN GEISLER,  
Engineer.



## ST. PAUL WATER WORKS PUMPING STATION, CENTERVILLE LAKE.

ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1898.

MONTHS, 1898.	Number of Hours Pumped.	Number of Revolu- tions.	Number of Gallons Pumped.	Daily Average Pumped.	Total Cords Wood.	Average Daily Wood.
September .....	198½	254,100	128,908,200	15,000,900	43½	5
October .....	615½	995,700	380,443,400	14,066,064	86½	3½
November .....	197	287,800	104,183,000	13,022,950	30½	4
Totals .....	1,011½	1,539,600	593,535,200	14,029,638	160½	4
Total gallons pumped.....					593,535,200	
Daily average gallons pumped.....					14,029,638	
Total cords wood burned.....					160½	
Daily average wood used.....					4	

J. ABRESCH,  
Engineer.

## ST. PAUL WATER WORKS PUMPING STATION, WEST SIDE.

## ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1898.

MONTHS, 1898.	No. of Hours Pumped	Number of Revolu- tions.	Total Number of Gallons Pumped.	Daily Average Gallons Pumped.	Total Pounds of Coal Used.	Daily Average Coal Used.
January .....	13.00	32,890	592,020	19,097	17,250	556
February .....	13.24	34,680	624,240	22,294	16,000	571
March .....	16.46	43,790	788,220	26,428	16,800	542
April .....	25.12	66,510	1,097,180	36,572	17,500	563
May .....	50.10	128,490	2,312,820	74,607	25,100	809
June .....	50.30	129,440	2,329,920	77,664	25,400	780
July .....	71.25	184,590	3,222,620	107,181	29,100	939
August .....	57.25	148,570	2,674,260	86,427	25,300	816
September .....	71.15	183,500	3,303,000	110,100	29,450	981
October .....	57.25	145,740	2,623,320	84,623	25,800	803
November .....	48.40	117,710	2,118,780	70,626	24,100	803
December .....	16.45	43,460	782,280	26,324	19,400	626
Totals .....	490	1,259,370	12,668,660	61,654	269,200	742
Total number of gallons pumped.....					22,668,660	
Daily average gallons pumped.....					61,654	
Total pounds of coal used.....					269,200	
Daily average coal used.....					742	
Daily increase since 1897.....					17,769	

JOE DOERR.  
Engineer.

## REPORT OF CITY TREASURER.

OFFICE OF THE CITY TREASURER,  
ST. PAUL, Jan. 13, 1899.

*To the Honorable Board of Water Commissioners,*

GENTLEMEN: I have the honor to submit the following report of the receipts and disbursements of the Water Department and Water Department sinking funds for the year 1898:

### WATER DEPARTMENT.

#### CR.

By balance Jan. 1, 1898.....		\$14,900.48
By cash collections.....	•	194,038.56
By frontage tax.....		103,927.35

#### DR.

To cash, city orders, sundries.....	\$188,834.26	
To cash, city orders, interest.....	114,200.00	
To balance Jan. 1, 1899.....	9,832.13	
Totals .....	\$312,866.39	\$312,866.39

### WATER DEPARTMENT SINKING FUND.

#### CR.

By balance Jan. 1, 1898.....		\$7,525.08
By cash invested in bonds and certificates.....		372,048.72

#### DR.

To tax levy certificates.....	\$119,500.00	
To redemption of bonds.....	260,000.00	
To interest per city comptroller.....	48.86	
To balance Jan. 1, 1899.....	24.94	
Totals .....	\$379,573.80	\$379,573.80

Respectfully submitted,

C. L. HORST,  
City Treasurer.















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taken from the Building**

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